

MODERN PACKAGING

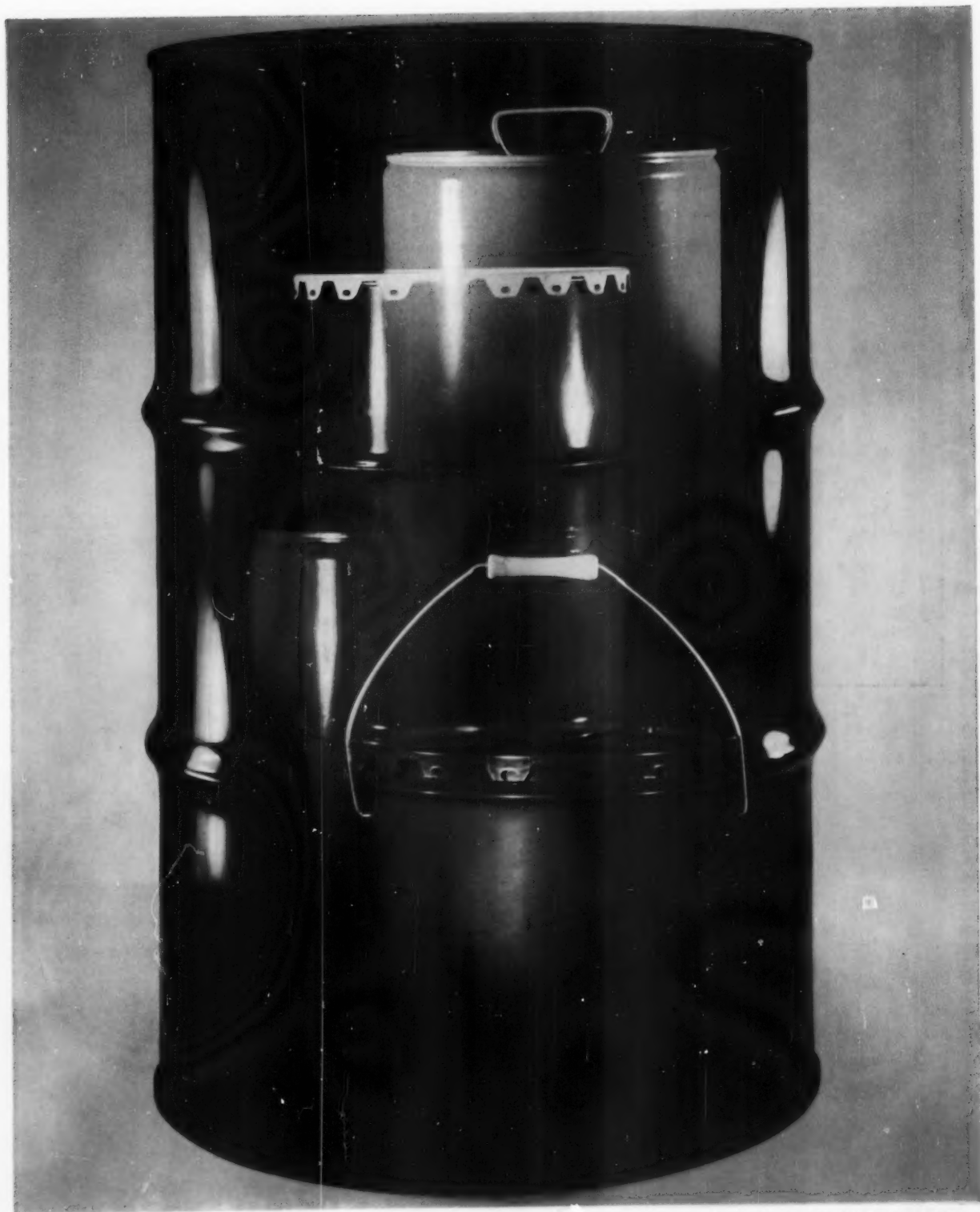


PHOTO FOR MODERN PACKAGING BY TIETGENS

Steel containers, too, can be beautiful

August 1958

COMPLETE CONTENTS p. 2



PREVENT DAMAGE WITH ADDED FRICTION

The above photos show what happens when RESYN® 32-4150, National's invisible non-skid coating, is sprayed on slick surfaced cases and bags.

At top: Gloss-inked cases of beer slip when a pulling force of 7 lbs. is applied.

Below: A light coating of RESYN 32-4150 on tops only has increased friction to the point where a force of 11 lbs. is required to make cases slip.

The result: A 57% increase in resistance to slip that safeguards workers, prevents damage.

RESYN 32-4150 can be spray coated on cases and bags during manufacture or after filling and packing. It is inexpensive. Instant drying. Colorless. Odorless. In no way dulls glossy sales messages. Write for complete information.

RESYNS

National

ADHESIVES

NATIONAL STARCH PRODUCTS, INC.

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PACKAGING MATERIAL BY DOBECKMUN

PACKAGED BY IVERS-LEE

ALCOA WRAP KEEPS THEM LABORATORY PURE

Here's the most efficient, economical way of protecting extremely sensitive drug and pharmaceutical products. Sealed airtight in Alcoa® Wrap aluminum foil, pharmaceuticals get sterile, nontoxic protection . . . stay full strength on drugstore and supermarket shelves.

Strong, durable Alcoa Wrap withstands handling by customers . . . it's moistureproof, greaseproof, puncture resistant.

Sell-on-sight appeal of gleaming, colorful Alcoa Wrap captures more sales from competitive brands.

What's your packaging problem? Whether it's guaranteeing dryness, pro-

tecting freshness, or getting a powerful sell-on-sight appeal—call your Alcoa salesman. He works with the nation's outstanding converters to fill all your packaging needs, with Alcoa Wrap. For more information, write: Aluminum Company of America, 1649-H Alcoa Building, Pittsburgh 19, Pa.

*You're always ahead with Alcoa
... greatest name in aluminum*



"ALCOA THEATRE"
Exciting Adventure
Alternate Monday Evenings

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Modern Packaging Executive and Editorial Offices, 575 Madison Avenue, New York 22, N.Y.
Please mail all correspondence, change of address notices, subscription orders, etc., to the above address.

Modern Packaging published monthly by Modern Packaging Corp., at Emmett St., Bristol, Conn. Modern Packaging Encyclopedia Issue published as second issue in November by Packaging Catalog Corp. at Emmett St., Bristol, Conn. Second-class mail privilege authorized at Bristol, Conn. Subscription rates (including Modern Packaging Encyclopedia Issue), payable in U.S. currency: In U.S., its possessions, and Canada, 1 year \$7, 2 years \$12, 3 years \$17; all other countries, 1 year \$20, 2 years \$33, 3 years \$50. Single copies 75 cents each (Show Issue, \$1; Encyclopedia Issue, \$3) in U.S., its possessions, and Canada; all other countries \$2 (Show Issue, \$2.50; Encyclopedia Issue, \$6). Contents copyrighted 1958 by Modern Packaging Corp. All rights reserved, including the right to reproduce this book or portion thereof in any form. © Reg. U.S. Pat. Off.

STACK CAPS

Tops 'em all!

WHY STACK-CAPS? The present merchandising trend requires stacking of products for mass display and conservation of valuable shelf space. GILBERT PLASTICS' stack-caps are durable . . . protect the spray nozzle . . . are

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MODERN PACKAGING®

No black magic

Some years ago packaging weathered an attack from agitators who sought, unsuccessfully, to prove the whole thing a waste of the consumer's money. Now it is being sniped at again, this time on the grounds that some packagers are so unscrupulous that they'll grab you and take the money right out of your pocket.

Obviously, somebody has been taking seriously the speeches and press releases of the mumbo-jumbo motivation boys who would have you believe that through some occult science (known only to them) it is possible to endow a package with just such powers.

Too bad, though, that a responsible fellow like W. M. Kiplinger should fall for this line of talk. In his consumer magazine, *Changing Times*, Kiplinger presents an exposé billed as "the inside story of how packages make you spend money."

Make you spend money? Oh, come on now, W. M.! Packages can't pick pockets. If you had said "make you *want* to spend money" we'd be interested, because unless we're mistaken that's the objective of everyone who has something to sell, including Mr. Kiplinger.

But no. The Kiplinger article would have you believe that packages are psychological booby traps, catching hold of the poor shopper's reflexes, frustrations and aspirations, and pulling and hauling them so that she ends up in a state of unconsciousness, buying something she doesn't really want. "Shoppers," the article says, "are not conscious of the effect a package has on them."

As horrifying examples of mass seduction of consumers, the article cites the popularity of table salt in shaker-type containers, tomatoes in cellophane, soap and margarine with foil wrappings, nuts and bolts in film packets and food cartons with pictures that excite the salivary glands.

Mr. Kiplinger, you sadly underestimate the intelligence of the American consumer. If she pays more for a convenience package, it's because she wants convenience and is willing to pay for it. If she prefers tomatoes in cellophane, it's because she values the privilege of seeing what she's getting. If she likes things in foil, it's because she knows foil means freshness. If she picks the food product in a picture carton, it's because that picture tells her what she wants to know about the product inside the package.

It's as simple as that. No black magic.

You can, if you like, criticize American consumers for failing to live a spartan existence. But please, Mr. Kiplinger, don't criticize packagers for giving the consumers what they want.

The Editors



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The sparkling transparency and snug fit of Dobeckmun's "Ultrakleer" polyethylene is an important part of the marketing program for Pepperell's quality linens. Coupled with a sharpness of printing, Dobeckmun's polyethylene packages help make Pepperell "The brand women believe in."



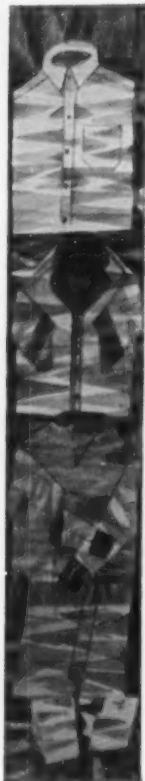
Packages for performance...

Dobeckmun polyethylene packaging offers new sales opportunities to the textile industry. Its application to textile products is unlimited. From women's sweaters and slips, men's stockings and shirts, to household's many white goods... Dobeckmun polyethylene helps sell them all on sight.

The reason is clear: a high transparency that presents textile products at their best; that gives the brand name added impact; the printed message greater appeal.

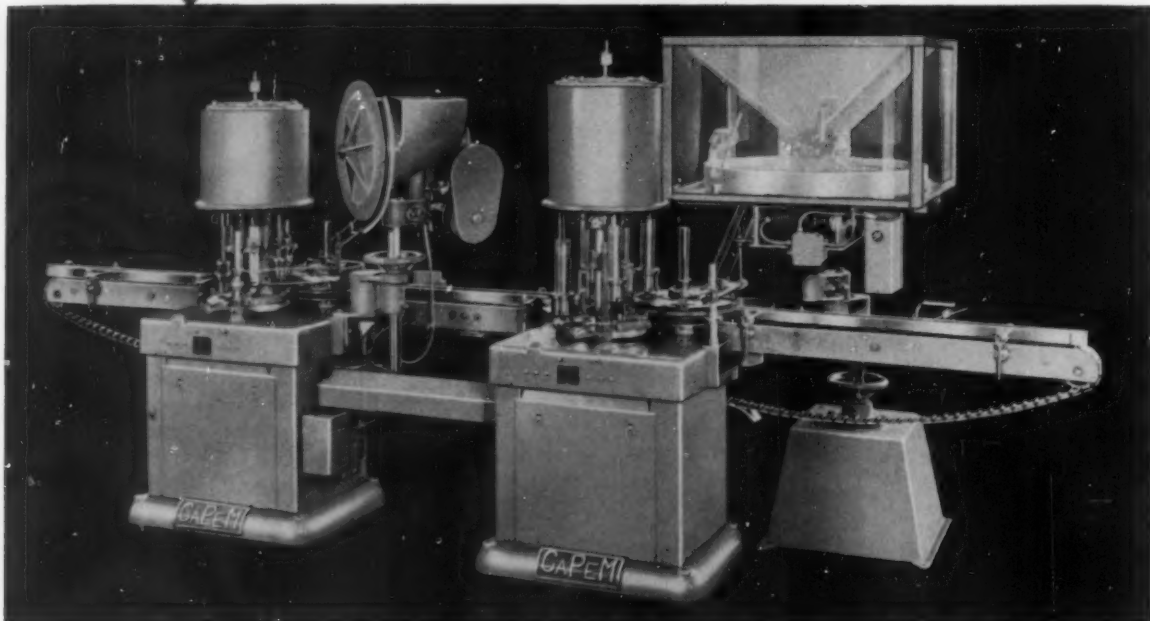
Dobeckmun makes a variety of polyethylene bag constructions to complement most textile products. Above all, Dobeckmun polyethylene is specially made to conform to high-speed packaging machinery... assuring top quality packaging performance every time.

Whatever the style of textile... from selection to point of sale... your product is packaged for performance by The Dobeckmun Company, A Division of The Dow Chemical Company, Cleveland 1, Ohio. Berkeley 10, California • Offices in most principal cities.





Here's Top Speed Handling For Can Breasts



This Consolidated model C-4-HB Can Breasting Machine automatically sorts and applies various shapes of can breasts, including square, rectangular, round and oval, with speeds up to 175 per minute.

You'll step up production . . . increase packaging efficiency . . . with this high-speed Consolidated synchronized unit for applying can breasts and secondary threaded or slip closures.

Nothing is sacrificed for speed. The Consolidated Can Breasting unit, available in 2, 4, 6 or 8 head models, exercises unusual care, greatly reducing objectionable scratching.

A variety of can breasts are fed automatically from the plexiglass major supply hopper to the rotary sorter. Every operation is geared to fit your individual packaging need.

CAPEM

**THE HIGH SPEED DEPENDABLE
SCREW CAPPER**

CONSOLIDATED PACKAGING MACHINERY CORP.

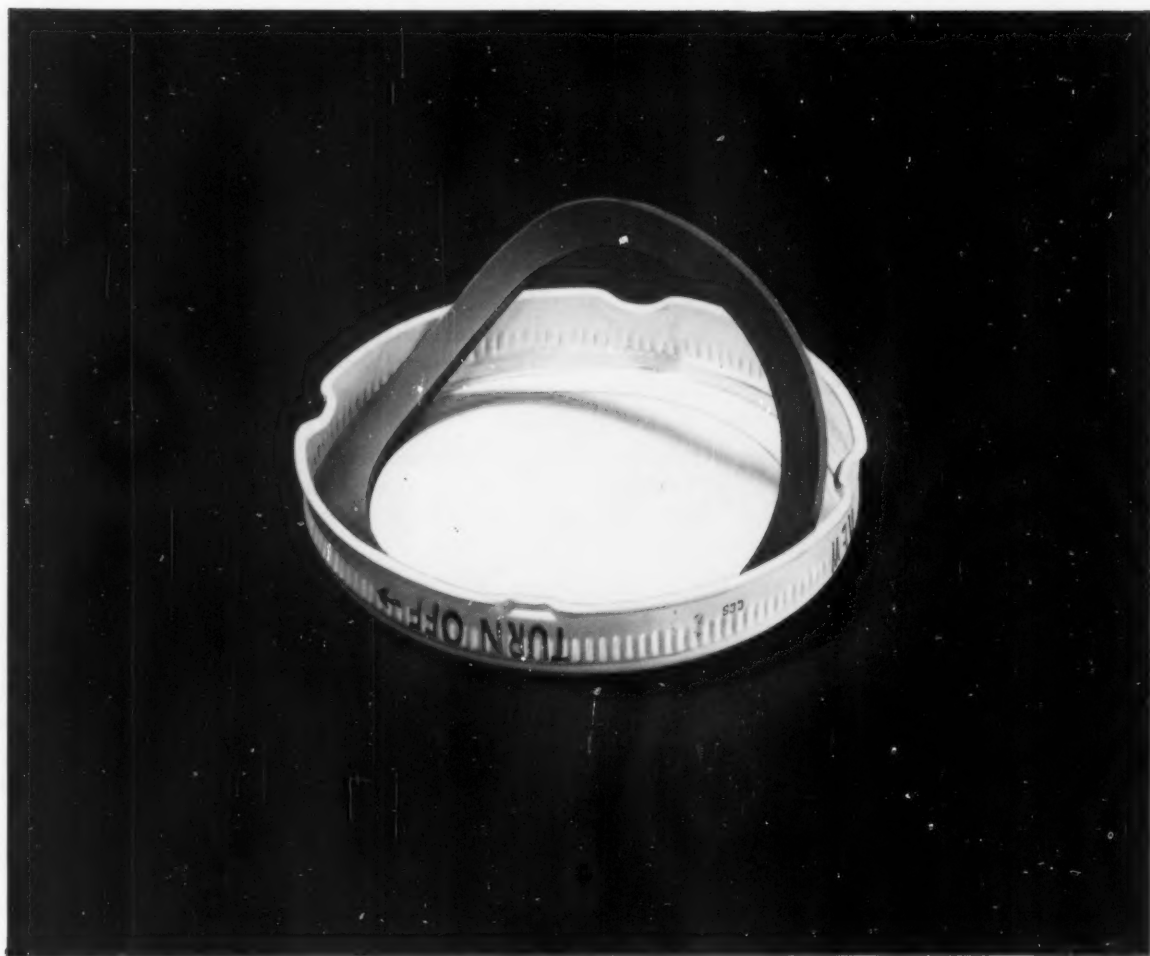
BUFFALO 13, NEW YORK

Synchronized with the sorter is a standard 4-spindle Consolidated capping unit. This applies all types of threaded or snap-cap closures. Here's top speed and top efficiency occupying minimum floor space.

For complete information on this dependable, time-saving Can Breasting machine, write Sales Manager, Consolidated Packaging Machinery Corp., 1400 West Avenue, Buffalo 13, N. Y.

**THESE COMPANIES HAVE THE CONSOLIDATED CAN
BREASTING MACHINE IN USE OR ON ORDER:**

Johnson & Johnson	Wallace & Tiernan, Inc.
The Mennen Company	Clark-Cleveland, Inc.
Carlova	Colgate-Palmolive Co.
Block Drug Company	Scholl Mfg. Company
Plough, Inc.	Grove Laboratories, Inc.
	Parke, Davis & Co.



... you are looking at the only lug cap
*that gives you a **LIVE RUBBER SEAL***

Crown pioneered the development of the quarter-turn lug cap. And only CROWN offers you the positive protection of a *live rubber seal*. Live rubber will *reseal* again and again. There is *no deterioration* or "setting"—elasticity assures *conformance* even to rough jar lips. Live rubber is the *best* material for withstanding live steam and pasteurization temperatures.

CROWN lug caps are designed for maximum mechanical efficiency as well as the fashion flair.

Deeper sides give added strength and ease of handling. Choice of plain or knurled sides offers you maximum flexibility for all product lines. Crown's exclusive, *flat-seating lug* threads give positive, non-loosening seal—with or without vacuum pack.

For lug caps to fit all your requirements—no matter how exacting... for C.T. caps with the broadest selection of liners ever offered... let Crown serve you.

for cans • closures • crowns • machinery

CROWN

CROWN CORK & SEAL COMPANY, INC.
 9300 Ashton Road, Philadelphia 36, Pa.

General Packets has a reason...

The new ingenious Shaker Pak carries a standard product in a most *un-standard* package: individual servings of salt or pepper that remain tightly sealed until needed, then open and reclose easily without muss or fuss. To develop the paper, Riegel worked closely with General Packets' engineers and formulated a moisture-vapor-resistant pouch paper with a special heat-seal coating that turned the trick.

It's another example of the extra benefits that are yours when your products are *protected by Riegel*:

Product protection *always*, plus flexible packaging materials that are:
...tailored to run at high speed on automatic machines
...made to your own specifications; printed, waxed, coated, and laminated combinations of all types
...made right, run right, and priced right.

Hundreds of today's best sellers benefit from Riegel's uniformly effective system of product protection. You can too. Write to Riegel Paper Corporation, 260 Madison Avenue, New York 16, N. Y.

Riegel PROTECTIVE PACKAGING MATERIALS



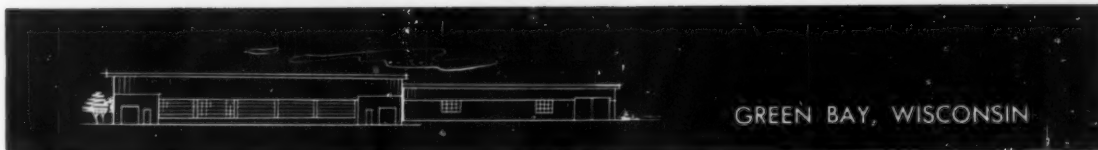
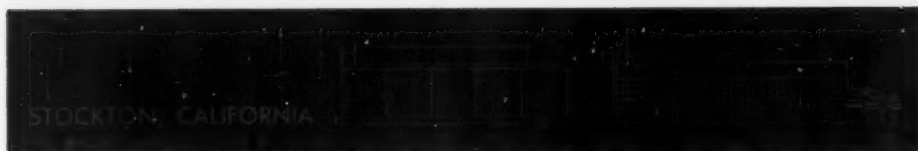
Handy individual "shakers" for salt and pepper are made by General Packets of a special Riegel coated pouch. Packaged and heat-sealed at high speed on custom-built machines.



ONE OF THE MANY REASONS FOR DOING BUSINESS WITH NATIONAL CAN

last year alone new plants

4



NATIONAL CAN
C O R P O R A T I O N



CHICAGO
NEW YORK
SAN FRANCISCO

PLANTS
FROM COAST
TO COAST



Packaging with a new sales slant

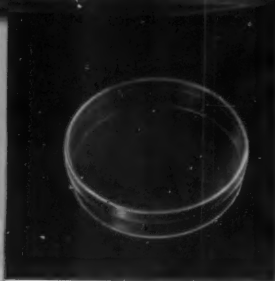
This smart, new mustard package tilts its broad label upward at just the right angle to best catch the shopper's eye.

The clean-cut sloping lines created by Armstrong packaging specialists eliminate troublesome shoulders—making this jar easier to use and more

attractive on the table. Its broad, non-tipping stacker bottom permits sturdy displays—and gives the container a larger and taller appearance. See your Armstrong man for packaging ideas backed by years of sound merchandising experience. Armstrong Cork Company, Lancaster, Pennsylvania.

Armstrong PACKAGING

WATCH ARMSTRONG CIRCLE THEATRE EVERY OTHER WEDNESDAY EVENING ON CBS-TV



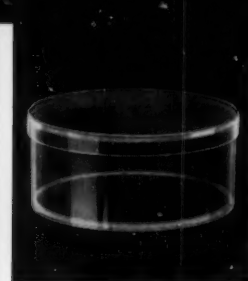
No. 32 diam: $2\frac{3}{4}$ " x $\frac{5}{8}$ " deep



No. 10 diam: $3\frac{1}{4}$ " x $1\frac{1}{4}$ " deep



No. 12 diam: $3\frac{3}{4}$ " x $2\frac{1}{8}$ " deep
(Plastic Snap-on Cover)

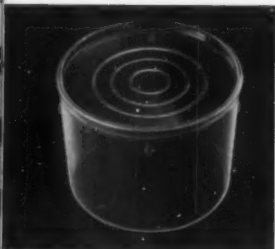


No. 15 diam: $3\frac{1}{4}$ " x $1\frac{1}{4}$ " deep



No. 210 diam: $3\frac{1}{4}$ " x $1\frac{1}{4}$ " deep
No. 211 (with Polyethylene Lid)

looking for a box that's round?



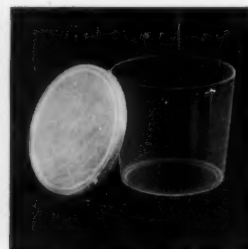
No. 42F diam: $3\frac{1}{4}$ " x $2\frac{3}{4}$ " deep
No. 21F diam: $3\frac{1}{4}$ " x $1\frac{1}{4}$ " deep



No. 415 diam: $3\frac{3}{4}$ " x $3\frac{3}{4}$ " deep
(Rigid translucent with clear lid)



No. 420 diam: $3\frac{1}{4}$ " x $2\frac{3}{4}$ " deep
No. 421 (with Polyethylene Lid)

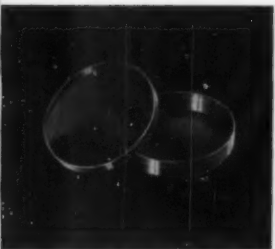


No. 425 diam: $3\frac{1}{4}$ " x $3\frac{3}{4}$ " deep
(Polyethylene Lid only)

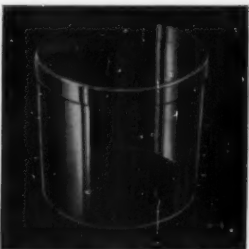


No. 72 diam: $3\frac{1}{4}$ " x $2\frac{3}{4}$ " deep

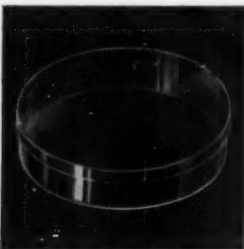
TRI-STATE is your source for



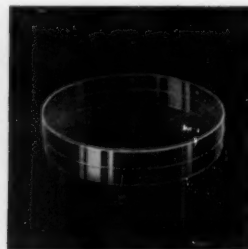
No. 52 diam: $4\frac{1}{4}$ " x $\frac{1}{4}$ " deep



No. 190 diam: $5\frac{1}{4}$ " x $5\frac{1}{4}$ " deep



No. 56 diam: $4\frac{1}{4}$ " x $\frac{3}{4}$ " deep

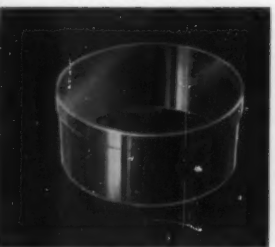


No. 170 diam: 6" x 1" deep



No. 175 diam: 6" x $1\frac{1}{4}$ " deep

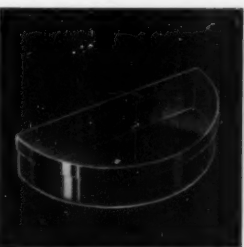
the world's largest assortment of



No. 180 diam: 6" x $2\frac{1}{2}$ " deep



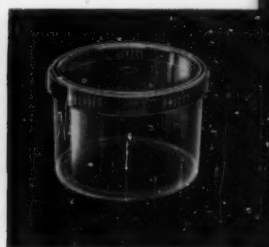
No. 240 diam: 8" x 3" deep
No. 250 diam: 10" x $3\frac{1}{4}$ " deep



No. 24 $2\frac{1}{4}$ " x $4\frac{1}{4}$ " x $\frac{1}{8}$ " deep
No. 54 $2\frac{1}{4}$ " x $4\frac{1}{4}$ " x $\frac{3}{8}$ " deep



No. 84 $2\frac{1}{4}$ " x $4\frac{1}{4}$ " x $1\frac{1}{4}$ " deep

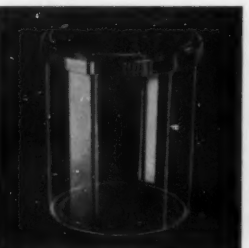


No. C40 diam: $3\frac{1}{4}$ " x $2\frac{1}{4}$ " deep

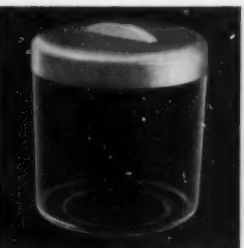
Rigid Plastic Boxes...all shapes and sizes



No. C50 diam: $3\frac{1}{4}$ " x $5\frac{1}{4}$ " deep



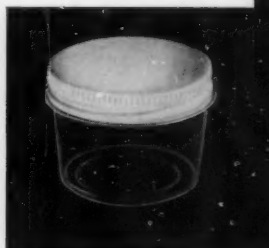
No. C70 diam: 4" x $5\frac{1}{4}$ " deep



No. C189 diam: $7\frac{1}{4}$ " x $7\frac{3}{4}$ " deep



No. 09 diam: $3\frac{1}{4}$ " x $3\frac{3}{4}$ " deep



No. 02 $1\frac{1}{4}$ " x $1\frac{1}{2}$ " deep

TRI-STATE PLASTIC MOLDING CO

Chicago: 209 S. State Street, Harrison 7-8630

Henderson 6, Ky., Valley 6-9061

New Tear Tape Opens
an Important Subject...

REYNOLDS WRAP ALUMINUM PACKAGING FOR CIGARETTES

New gold tear tapes give Hit Parade Cigarettes an eye-arresting gleam...adding smartness to zip-open convenience. And the fact that the gleam is *aluminum* may well be considered symbolic. One of the longest success stories in aluminum packaging has tobacco for its subject!

Aluminum foil has been used as an inside wrap in cigarette packs for more than 30 years. Its importance is eloquently attested by its universal use today—for all brands. The tobacco industry fully recognizes the superiority of aluminum foil for protection against moisture loss and absorption, and as a barrier to harmful light rays. It plays an essential role in maintaining factory freshness and aroma.

Reynolds experience in aluminum foil packaging goes back to its earliest use by the tobacco industry. Today Reynolds supplies all types of aluminum foil liners and gravure-printed overwraps. In addition, the latest developments in aluminum foil cartons are made available by the Company's new \$4,000,000 facilities—world's most modern. For information, call the nearest Reynolds sales office. Or write to **Reynolds Metals Company**, Richmond 18, Va.

Brand Power Plus!

To the tremendous sales power of famous brand names, the Reynolds Wrap Aluminum Packaging Seal adds *still more power*. Surveys prove it's widely recognized, a positive influence on buyer's choice. Backed by consistent national promotion—network TV, magazines, spectacles

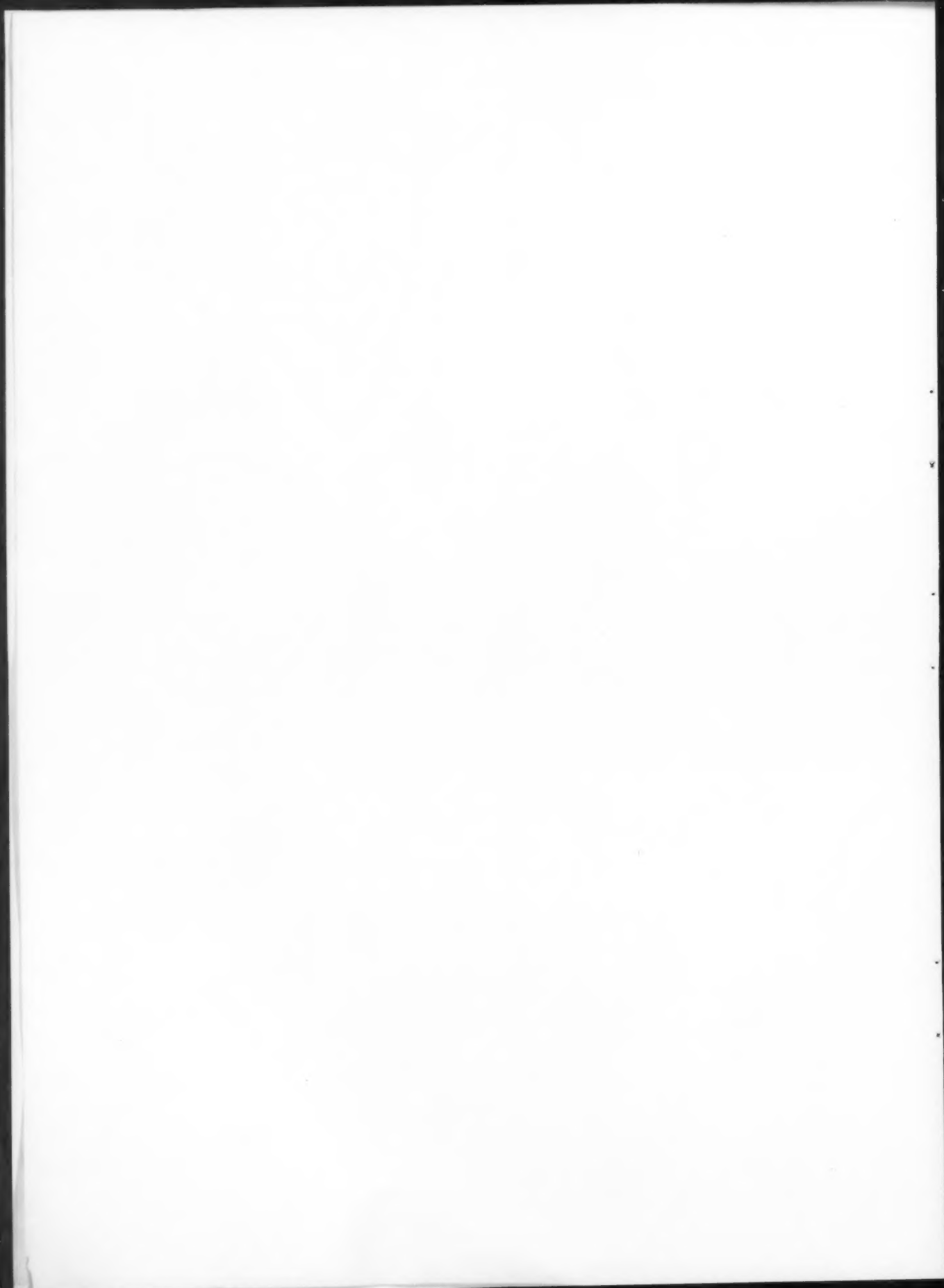


REYNOLDS ALUMINUM

Watch Reynolds All-Family Television Program "DISNEYLAND", ABC-TV.



Symbolizing a long association ...
Tobacco and Reynolds Wrap
Aluminum Packaging.





Want sealed packages that stay sealed?

The glassine paper above is tearing, but the seal is *not*. The reason is simple. It's the coating based on PLIOLITE S-7. This unique copolymer insures a heat-seal that just won't give.

And that's not all. PLIOLITE S-7 also provides glassine and other papers with supreme crease-resistance, excellent resistance to the passage of moisture, unusual anchorage, good slip, superior aging, high gloss and exceptional clarity — simply

and economically.

PLIOLITE S-7 is supplied as a 30% solution, in a single aromatic solvent, designed for high-quality paper coatings. It is easily modified with waxes, resins or liquid plasticizers to meet specific requirements. And it is smoothly applied on standard equipment. For full details, including the latest *Tech Book Bulletins*, write Goodyear, Chemical Division, Dept. T-9422, Akron 16, Ohio.



GOOD YEAR

CHEMICAL DIVISION



Pliolite, — T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

ARABOL SPECIFICATION ADHESIVES



TEMPERATURE-RESISTANT ADHESIVES


Busy people enjoy the convenience of bake-and-serve rolls—popped from the refrigerator into 425° heat. The single package serves as a selling unit, as a deep-freeze container, and as a baking and serving tray. The foil must be properly adhered to the paperboard, while hot or cold, and remain odorless at all times.

Here is a real test of the adhesive's resistance to heat and cold—a specification common in many other fields. It may be a factor in your operations.

ARABOL Adhesives are specification-formulated for dozens of other requirements—in the making, packaging, labeling and shipping of the products of industry. *Specification* adhesives—to meet each of your requirements—cost little more (and sometimes less) than run-of-mill adhesives.

We invite the opportunity to submit formulated samples—for tests to be made in your own plant—under your own particular working conditions. That is the one kind of testing that assures you of satisfactory results.

Our fourteen plants and warehouses—plus four laboratories—are your assurance of service and delivery. It is our privilege to serve the leaders, as well as hundreds of small users. May we send you a helpful booklet listing 23 basic specifications for adhesives? Kindly address your inquiry to Department 15.



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73 YEARS OF
PIONEERING IN THE
MAKING OF ADHESIVES

THE ARABOL MFG. CO. . . . a nationwide organization serving major users of industrial adhesives

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BOSTON • PORTLAND, Ore. • ITASCA and McALLEN, Tex. • CINCINNATI • DENVER • TAMPA • LONDON, Eng.



Avedon

THE SUN NEVER SETS...ON CHAMPION PAPERS

This summer's best-dressed beachcombers will wear more sun tan than anything else. But the quality products that accompany them most often will be distinctively dressed in cartons of Kromekote® Cast Coated Folding Board. Its mirror-like surface is superlative for single or multi-color reproduction. This, with its excellent folding and embossing qualities, makes it the finest of its kind in the packaging field for such items as cosmetics and pharmaceuticals.

CHAMPION SETS THE PACE IN PAPERMAKING

CHAMPION® PAPERS

THE CHAMPION PAPER AND FIBRE COMPANY • HAMILTON, OHIO

District Sales Offices in New York, Chicago, Philadelphia, Detroit, St. Louis, Cincinnati, Atlanta, Dallas, and San Francisco. Distributors in every major city.

Quality coated and uncoated papers for books, magazines, envelopes, labels, boxwraps, greeting cards, business forms, tags, tablets, food packaging, and many other uses.



Looks good enough

to eat...

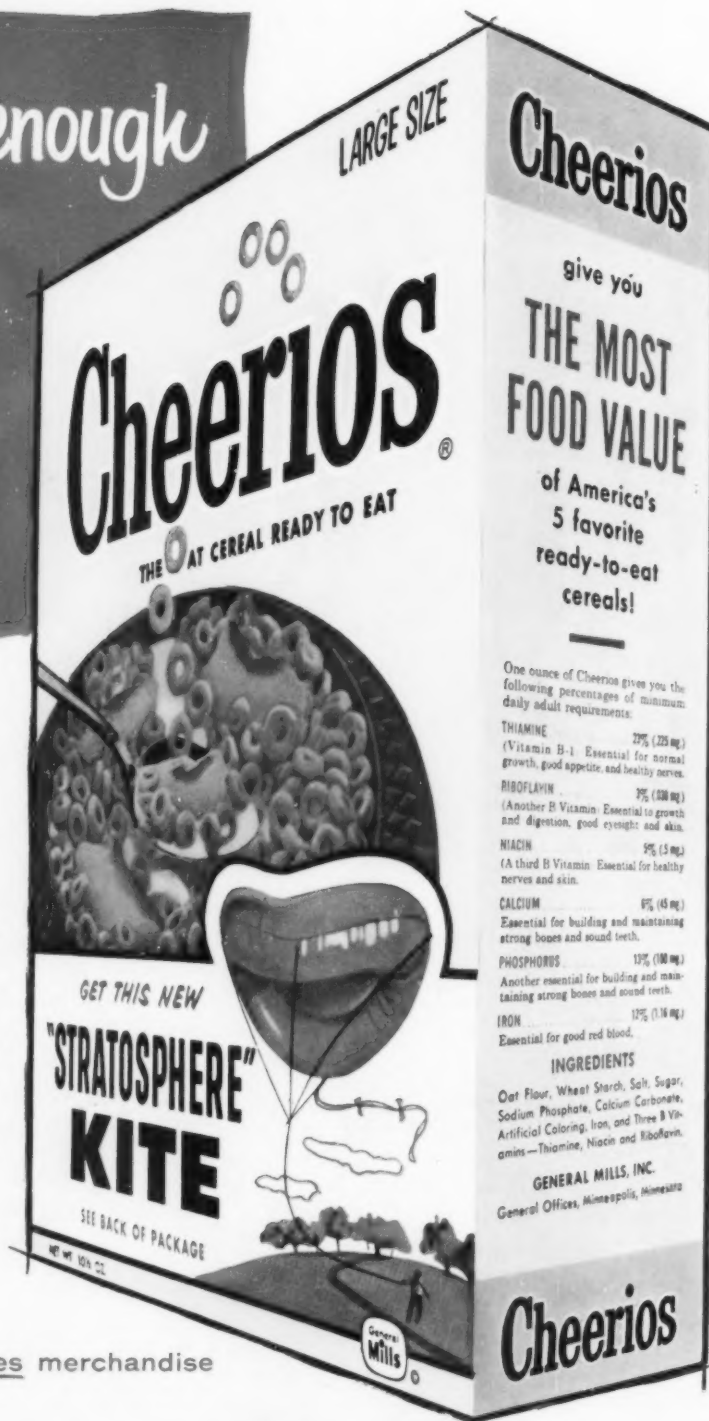
thanks to
**Planned
Packaging!**

There's no question that mouth-watering color reproduction helps speed Cheerios from market to kitchen shelf. Does your product have this same competitive edge... The sparkling, tempting impact that's so necessary on today's retail shelves?

At Rittman, the world's largest volume carton plant, we have high-speed printing equipment capable of faithfully reproducing *anything* in color.

Whether you need improved styling, better color reproduction or faster running cartons, Planned Packaging experts are ready to serve you.

Just write or call.



Planned Packaging moves merchandise

The Ohio Boxboard Company
Rittman, Ohio



**CONTAINERS
CARTONS
PAPERBOARD**

The Ohio Boxboard Company, Rittman, Ohio
Empire Box Corporation, South Bend, Indiana

The General Carton Company, Cleveland, Ohio
The Norwalk Paper Box Company, Norwalk, Ohio
Fairbanks Containers, Inc., Middletown, Ohio
Champion Containers, Inc., Plymouth, Michigan

The Ohio Boxboard Company, Cuyahoga Falls, Ohio
The Ohio Boxboard Company, Youngstown, Ohio

The Ohio Boxboard Co., Inc., Pittsburgh, Pa.
Western Containers, Inc., Lockport, N. Y.

DAN RIVER GOES TO MARKET



and
to town!
in
VITAFILM

FROM gift put-ups to hefty doubled-and-roll goods—Dan River Mills relies on the unique qualities of VITAFILM packaging to deliver and merchandise its fine textiles in “mill fresh” condition.

For in this superior Goodyear transparent film you get two outstanding features that are so desirable for textiles:

1. VITAFILM transmits the true “feel”—the actual *texture*—of the fabric it contains, *right through* the film itself. It

is so soft and pleasing to the touch; VITAFILM bespeaks the quality of the merchandise.

2. Next, it has wonderful contact clarity—the ability to show the true colors and smart designs of the fabric, just as though the customer took the unwrapped fabric to the sunlit doorway of the store.

BYOND all this, VITAFILM is as durable as it is smart—heat-seals to hold

heavy bolt goods without ripping or splitting; prints beautifully, doesn't attract dust, and is easily handled on high-speed machinery.

Give glamor, salesmanship and perfect protection to your merchandise—*give it the VITAFILM treatment!* For complete information, write the Goodyear Packaging Engineer, Goodyear, Packaging Films Department T-6418, Akron 16, Ohio.

Vitafilm by **GOOD YEAR**

THE FINEST IN SHEER PROTECTION

Vitafilm, a Polyvinyl chloride—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

*fmc sets the pace
in high speed
electronic check weighing*

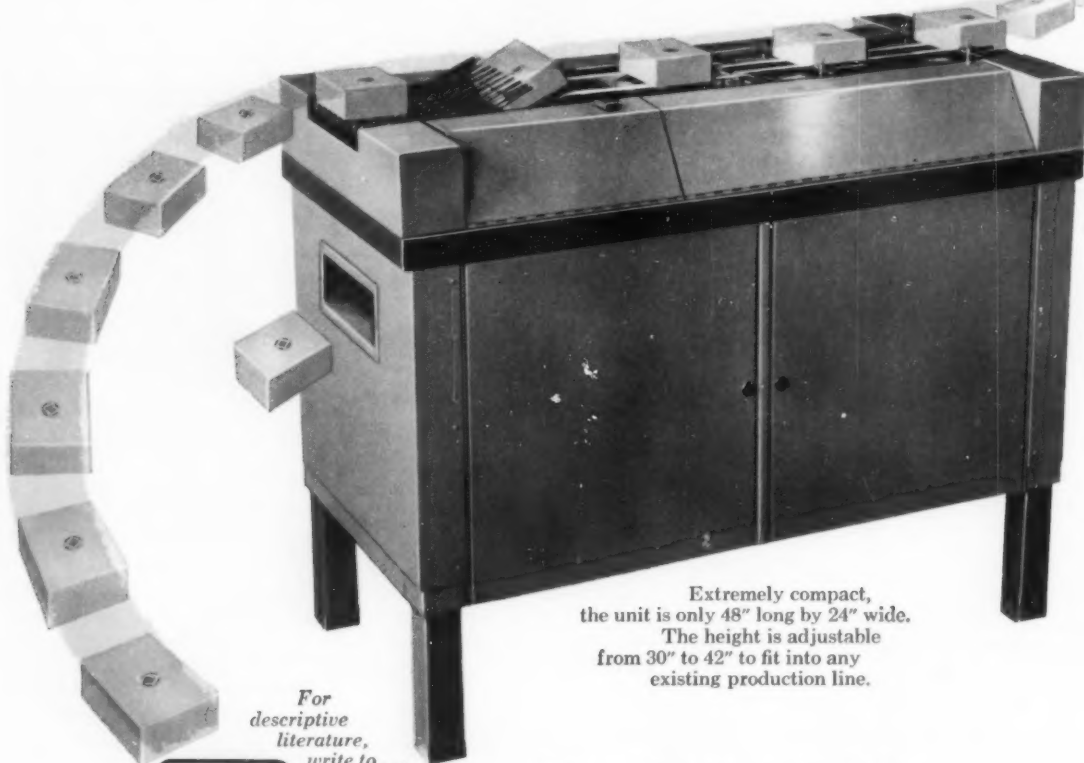
...400 packages per minute "on the fly"

At speeds never before possible, you can now check weigh all your production with unvarying accuracy. Depending on gross package weight, the new FMC Electronic Check Weigher senses variations of as little as plus or minus 1/2% at a rate of up to 400 packages per minute.

With a constant speed, no-stop motion, this new check weigher takes the production from one or more filling lines via high speed conveyor, weighs and segregates each package according to pre-

set tolerances for over or under weight. Fully automatic, it operates without an attendant.

The new FMC Electronic Check Weigher handles round, conical, rectangular, oblong or irregular packages up to 10" wide by 10" long. Package weight ranges from 1 ounce to 1 pound or from 8 ounces to 3 pounds. Controls for setting weight tolerances are simple and readily accessible on a side panel. Recording instruments and numerical counters are supplied if required.



Extremely compact,
the unit is only 48" long by 24" wide.
The height is adjustable
from 30" to 42" to fit into any
existing production line.

For
descriptive
literature,
write to ...



Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
FMC Packaging Machinery Division

Stokes & Smith Plant
4904-G SUMMERDALE AVENUE, PHILADELPHIA 24, PA.



THIS SEAL

identifies a new quality brand of Bleached Sulphate Board

produced in a most modern, fully integrated plant, located at St. Marys, Ga. Bleached virgin pulp produces board of the highest brightness, maximum purity, utmost strength.

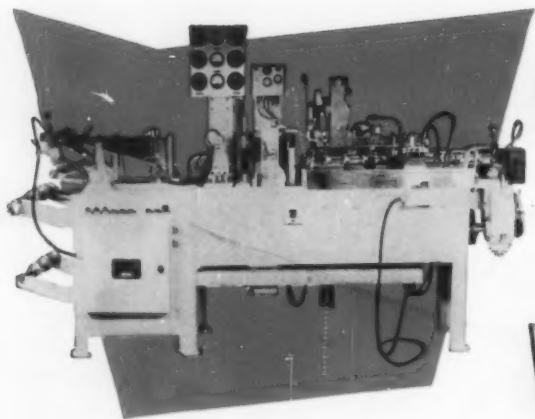
*We'll gladly
send you samples
in this
file-size folder
if you will
send us
specifications.
Address Dept. M*



3 GENERATIONS OF PAPER MAKING

GILMAN PAPER COMPANY, 630 FIFTH AVE., NEW YORK 20

MOST QUALITY CONSCIOUS PRODUCER IN THE INDUSTRY!



FROM LOW COST HIGH SPEED MACHINES

Now, you can have a fast, efficient packaging line with built-in versatility to meet changing market requirements. The Bartelt machine can produce a variety of sizes and combinations of packages such as those shown on the right. Pouches can be made from whatever heat sealable materials your product requires. Cartons can be filled with the desired number of pouches and with premium items. Write for new literature describing these latest advancements in automatic packaging.



TO COMPLETE PACKAGING LINES



BARTELT

"Machinery for Creative Packaging"

BARTELT ENGINEERING CO., ROCKFORD, ILL.
New York Office, 370 Lexington Ave.



idea sharpening: taking a basically sound idea and honing it to a fine point for maximum penetration.

In packaging, Lassiter idea sharpening includes experienced recommendations on package design and material, store display, packaging machinery. Another good reason to call Lassiter.

LASSITER

C O R P O R A T I O N
350 FIFTH AVENUE • NEW YORK 1

EXECUTIVE OFFICES: Charlotte, N. C.
DIVISIONS: Chicago, Ill. • Cheltenham, Pa.
Atlanta, Ga. • Greensboro, N. C. • Danville, Va.

MANUFACTURERS OF PRINTED PACKAGING IN PAPER, PAPERBOARD, TRANSPARENT FILM, FOIL



SIZE
is no
problem
with
Royal

Big bottles, little bottles . . . and all the way in between! Whatever your needs may be, Royal's extensive line of plastic stock bottles, ranging from 1/4 oz. to 1 gallon capacity, provides the answer to a multitude of container problems. And Royal's uniform quality of production, plus dependable delivery schedules, offers a combination that assures you the same complete satisfaction enjoyed over many years by an ever-growing number of Royal customers everywhere.

Bottles from stock molds (1/4 oz. to 1 gallon) are stocked by these distributors:

LOS ANGELES

Berri-Ecklund, Inc.
4726 Melrose Ave.

PATERSON, N. J.

Modern Decorating Co.
155 Oxford St.

MIAMI, FLA.

Magic City Bottle & Supply Co.
1380 N. W. 23rd St.

SAN FRANCISCO

Marketing Agents, Ltd.
207 Powell St.

CHICAGO

Berman Bros., Inc.
1501 S. Laflin St.

MONTREAL

Browns Bottle & Supplies, Inc.
1655 Des Carrières St.

Royal designs and produces Containers of Distinction for leading manufacturers throughout the nation and has complete facilities to produce private mold designs at surprisingly low cost.

Royal

Royal containers are made under U. S. Patent No. 2,750,624



ROYAL MANUFACTURING COMPANY, INC. PRESCOTT, ARIZONA

Save up to 54%

*on your overwrap costs by
switching from cellophane
to film made of*

MARLEX*

This new film made of MARLEX linear polyethylene represents a real breakthrough in transparent overwrap packaging. It is as different from conventional low and medium density polyethylene films as it is superior to cellophane. For detailed information, contact your film supplier or packager, or write to us directly for application data and film samples.

*MARLEX is a trademark for Phillips family of olefin polymers.

- Sparkling clear, glossy, transparent film with excellent printability!
- Boilable . . . freezable! Perfect for frozen food packaging!
- Infinite shelf life! No humidity or "drying out" problems! Crackproof!
- Moistureproof! Two to three times better than cellophane or conventional polyethylene!
- Easier to handle, non-blocking, heat-sealable! Economical thin gauges are used in conventional overwrap machines!
- Offers many times the grease resistance of ordinary polyethylene film!
- Five times the tensile strength of low-density polyethylene film!
- Ideal overwrap for baked goods, paper products, cereals, textiles, apparel, candy, cigarettes, sterilizable packages, snack foods, poultry and dairy products!
- Film made of MARLEX has a "built-in zipper"! No tear tape required! Opens easily with inexpensive die-cut "tear tab"!



Phillips Chemical Company
Bartlesville, Oklahoma
A subsidiary of
Phillips Petroleum Company



At the Cellophane Products Corporation plant in Providence — certified 6 hour 20 minute run was 35 rolls of MSD-53 cellophane in 28 1/4" width, 3100 lbs, three colors.

A finished roll every 11 minutes!

A Kidder Filmprinter prints, slits, splices in one continuous operation . . . while producing the highest quality of printing in excellent register and accurate sheet length, and with the very minimum of waste!

And Kidder, through their Performance Engineers, guarantees that you get these results. They set up your Filmprinter in your plant, check it for maximum operating efficiency, stay with your pressmen until they are fully educated to get this production from the press.

Who else does this? — Nobody but Kidder!

Kidder Press Company, Inc., Dover, N. H. Eastern Sales Office: Empire State Bldg., New York 1, N. Y. Mid-West Sales Office: 400 Washington Bldg., Madison

3, Wis. West Coast Representative: Bojanower Machinery Service Corp., 5270 E. Washington Blvd., Los Angeles 22, California.

Make Good Impressions Faster with



Flexoprinter,® Letterpress, and Gravure Presses, Slitters and Rewinders



FOR PRESSURE CANS



WITH AN UNRIVALED



SALES RECORD...



FOLLOW THE LEADERS TO CANCO

More shaving lather is sold in Canco pressure cans than in all other makes combined. Naturally, there are good reasons for this success!

Canco makes a full line of *guaranteed* pressure cans in seven sizes—with standard one-inch cup openings or individually styled tops. To give you a round-the-can label design, Canco has developed the first commercial coated side-seam.

Canco also offers experienced assistance from technical service experts and other specialists. And through nationwide consumer advertising, Canco has helped boost sales for all its customers in the aerosol industry! So, for *any* pressure product, take the leaders' tip—come to Canco first!

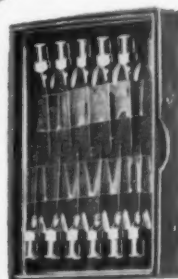
AMERICAN CAN COMPANY

Just Printed! Colorful folder on Canco products and services in the aerosol field. For a free copy write to American Can Company, 100 Park Ave., New York 17, N.Y.

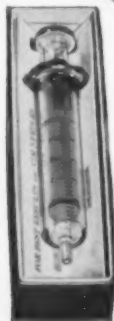
ROWELL BOXES



High in quality...
production
to meet your need



Set-up boxes in a wide range,
made for Cosmetic & Drug Trade
throughout the United States.
Inquiries also invited from
box users in other lines.



E. N. Rowell Co.
INC.
BATAVIA, NEW YORK

Candy, cookie-cracker, and similar plants frequently must package 20 or more different items and sizes. The giant volume items justify single-purpose, specialized weighers. But what about the remaining items which must be handled on a multi-purpose weigher? This new, semi-automatic net weigher with unique versatility and precision accuracy provides the answer.

Accuracy and Versatility...



get both with **WRIGHT JUNIOR WEIGHER**

Precise Wright's exclusive Hy-Tra-Lec® weighing precision guarantees pinpoint accuracy.

Versatile One ounce to one pound range, quickly adjustable. Easy change-over features including interchangeable spouts and weigh buckets.

Gentle Bulk and dribble vibratory feed handles the product with extreme care, and the weighed charge gently slides into the awaiting bag, box, jar, or can.

Efficient This machine possesses the same quality design and construction characteristic of Wright's automatic systems.

Low Cost The Junior Weigher pays for itself from savings gained by its versatility and accuracy.

MAIL THIS COUPON
FOR DETAILED LITERATURE

WRIGHT MACHINERY COMPANY
DIVISION OF SPERRY RAND CORPORATION
DURHAM, NORTH CAROLINA



DISTRICT OFFICES: Ridgefield, N. J., LaGrange, Ill., Dallas, Texas, San Francisco, Calif., Durham, N. C.

CANADA: Sperry Gyroscope Ottawa Limited, Ottawa, Ontario, Canada

WRIGHT MACHINERY COMPANY
Division of Sperry Rand Corp.
Durham, North Carolina

A-2

Gentlemen: Please send me detailed literature and price information on your Wright Junior Weigher.

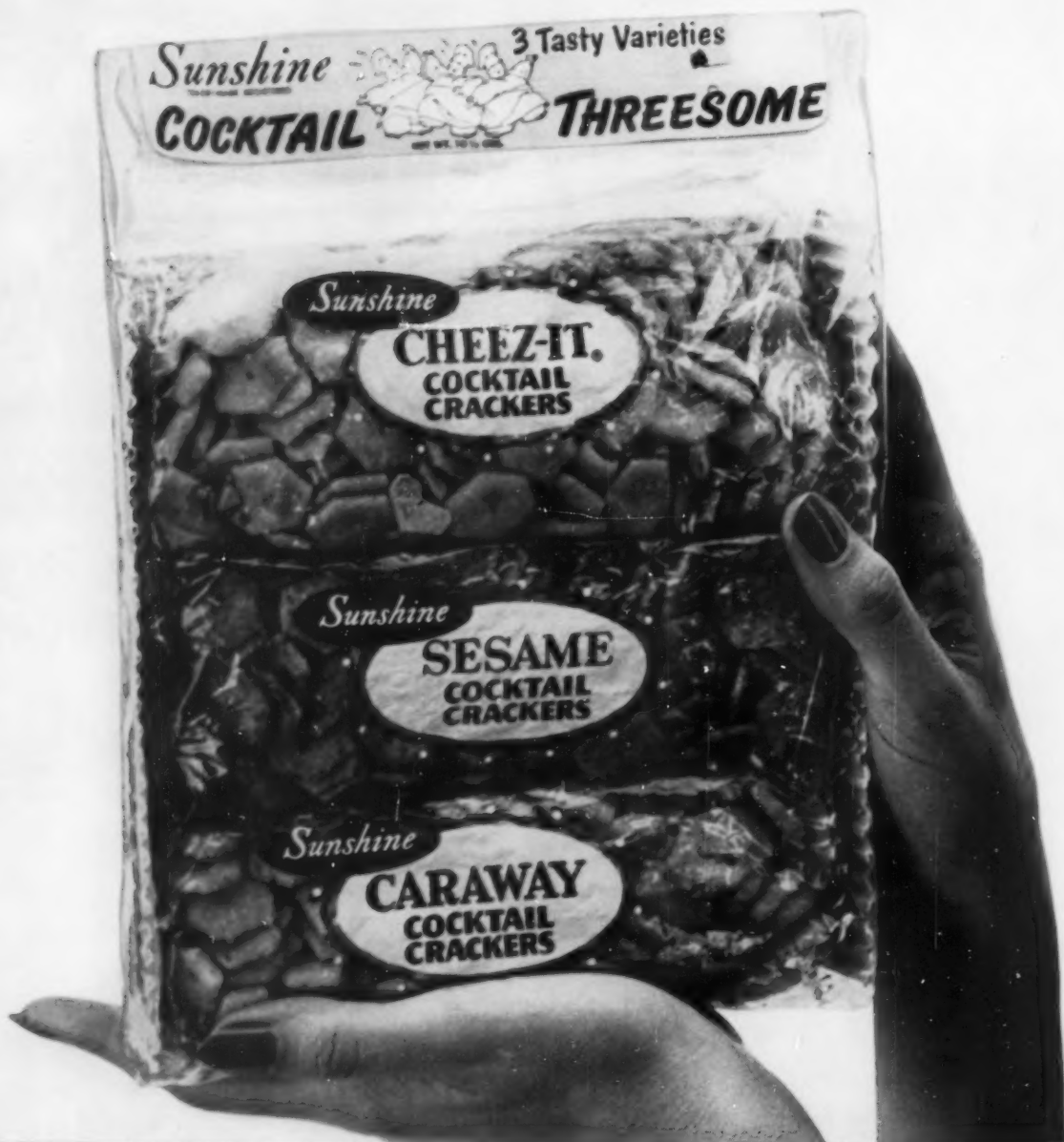
NAME.....

COMPANY.....

STREET.....

CITY & STATE.....

PRODUCTS.....



CONVENIENCE PACKAGING . . . with the

**So many new packaging ideas start with cellophane's transparency
... use cellophane's adaptability to satisfy buying moods**

People like to see what they buy. That's why it's smart to start with transparency in package planning. Crystal-clear Du Pont cellophane lets your product's color, shape and texture sell for itself. And, because cellophane is so easy to handle on machines, you

can capitalize on the growing demand for convenient multi-packs, fractional packages and bundles.

New extra-brilliant, extra-protective "K" cellophanes are the culmination of 34 years of transparent-packaging experience at Du Pont. Let this experi-

ence help you to a better package. See your Du Pont Representative or... for printed cellophane film and bags... contact your Du Pont Authorized Converter. E. I. du Pont de Nemours & Co. (Inc.), Film Department, Wilmington 98, Delaware.



basic sales power of pure transparency



REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

DU PONT
cellophane



**Youngstown
tin plate**

*will help feed
the families
of her day*

Automized, round-the-clock canning of foodstuffs in *her* day will feed more families than the world has ever known. Youngstown, today, is anticipating tomorrow's need for tin plate—in increasing quantity and quality. Continuing advancements in facilities, the result of tin plate research, make certain that millions of families in *her* day will enjoy the finest of food...packaged in Youngstown tin plate.



THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

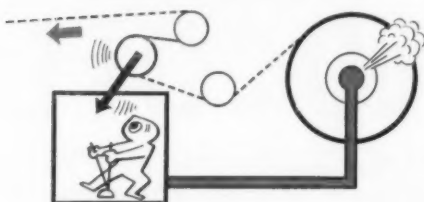
*Manufacturers of Carbon, Alloy and Yaloy Steel
Youngstown, Ohio*

check your unwind tension controls

If you want more profitable production from high speed winders, slitters or web-fed printing and processing machinery, **first check your unwind web tension controls!** No matter what material you work with, remember this...a relatively low investment in a dependable Cameron unwind tension control system will protect your profits by

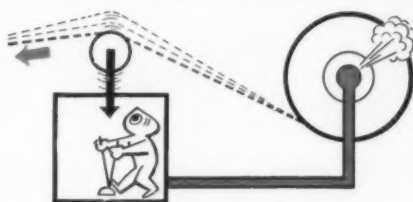
permitting higher, more productive operating speeds...by improving the quality of your finished product...and by minimizing loss through snap-offs. A fully automatic Cameron tension control system can be custom-fitted to meet the exact requirements of the material, the speed and the web-fed process with which you are concerned.

CAMERON 900



Extraordinary range and sensitivity assures instant correction of extreme parent roll irregularities. Versatile range of **MODEL 900** provides constant tension on a wide variety of plastic films, foils and papers. In **MODEL 900**, the fully automatic brake pressure control mechanism is actuated by low-inertia, low-friction dancer roll which moves in a horizontal plane to provide slack take-up on the unwinding web. This system provides exceptional range for extreme correction problems.

CAMERON WEB-TROL*



A highly accurate, fully automatic web tension control system which provides extremely fast correction for many types of roll-fed printing and processing equipment, as well as for slitters and roll winders. In **WEB-TROL**, the brake pressure control mechanism is actuated by a sensing roll which moves .010" in a vertical plane. Vertical travel of the sensing roll is governed by variations in down-pull on the unwinding web as it slackens or tightens, due to parent roll irregularities.
*patent pending

CAMERON CAMATROL*



A low cost, dependable, fully automatic system for maintaining constant web tension control. **CAMATROL** can be applied to many types of roll processing machines. With **CAMATROL**, the brake pressure control mechanism is actuated by an electric impulse which is governed by variations in load on the rewinding drive as the unwinding web slackens or tightens.
*patented

Three systems to choose from!

IT PAYS TO START your processing run with dependable control of the unwinding web. Reduce your costs, improve the quality of your finished product, and get more profitable production at higher speeds by starting with a Cameron custom-fitted web tension control system. Replace old, inadequate controls now, and see the difference! Ask Cameron specialists to tell you all about **CAMATROL**, **WEB-TROL**, and **MODEL 900**. Write, wire or phone today.

Cameron Machine Company, Franklin Road, Dover, N. J.

Canada: Cameron Machine Co. of Canada, Ltd., 15 Hatt St., Dundas, Ontario

France: Batignolles-Chatillon, 5 Rue De Montessuy, Paris (7e) France

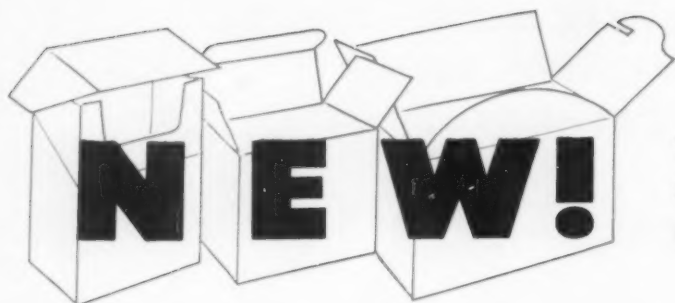
Built by Cameron's team of specialists

AA-356

50 years devoted exclusively to the design and manufacture of slitting and roll winding equipment.

AUGUST 1958

33



Two new folding carton boards...
made to Riegel's high quality
standards...and competitively priced.

Riegel's FOLDBRITETM

FULL-BLEACHED SULPHATE BOARD

Riegel's FOLDCOTETM

FULL-BLEACHED SULPHATE BOARD,
ON-MACHINE COATED ONE SIDE

- ★ OUTSTANDING BRIGHTNESS AND CLEANLINESS
- ★ SMOOTH, EVEN SURFACE FOR HIGH-SPEED QUALITY PRINTING
- ★ EXCELLENT FOLDING AND SCORING STRENGTH
- ★ AVAILABLE IN .007 TO .026 CALIPER

"Carolina Belle"... Riegel's giant new bleached paper and board machine at Acme, N. C., is now in production. We believe that its new Foldbrite and Foldcote grades are outstanding in their field, and

deserve your serious consideration. A wide range of other bleached board specialties can be tailor-made to your requirements. Write or phone for samples, prices and full information.



Riegel PAPER CORPORATION

260 Madison Ave., New York 16, N.Y.

ATLANTA • BOSTON • CHICAGO • EDINBURG, IND. • SAN FRANCISCO

Background

for

packaging

Notes,
quotes
and comments

Because packaging activity is so closely linked to the general business level, packagers can find a guide to their own prospects in reliable general economic indicators. *Note:* Of 400 purchasing executives in all types of business, 36% anticipate a definite increase in buying in the next 60-90 days and only 8% expect decline. Of 688 company presidents surveyed by American Management Assn., 52.5% now expect their sales for 1958 to equal or exceed 1957's and 80.5% say their advertising and sales-promotion expenditures will be the same or larger. And consumer expenditures in the first quarter of 1958—supposedly the depth of recession—would have been \$2 billion *ahead* of the rate for the preceding quarter had it not been for a \$3-billion drop in automotive purchases.

Significant indications for packaging from the recent mid-year convention of the American Rack Merchandisers Institute: Supermarkets in 1958 will experience a new peak in non-foods sales, with volume up 18 to 20%. Expansion is looked for in phonograph records, soft goods and toys, but housewares will continue to be the keystone of the non-foods lines.

Wall Street shows increasing awareness of the growth and stature of packaging. An analysis just published by Calvin Bullock, Ltd., estimates total expenditures for packaging at \$12 to \$14 billion (not far below MODERN PACKAGING's own figures) and notes that, "Practically all segments of the packaging industry have in the current year shown impressive resistance to the recession . . . and there is no evidence of any reversal of the above-average growth trend."

Packaging volume, excluding closures, machinery and accessories, is estimated by Calvin Bullock at \$10 billion and, in an interesting breakdown of this figure for 1957, it credits paperboard and paper with 45% of the dollar total, metals with 26%, plastics (including film) with 12%, glass with 8%, wood with 5% and textiles with 2%, with miscellaneous supplies making up the remaining 2%. According to the study, shipping cartons account for almost 60% of the total use of paperboard in packaging and cans account for 80% of the metal consumption.

Note the trend to more powerful and more colorful portrayal of the package in newspaper advertising. A new technique makes it possible to insert sheets of foil and coated paper on which packages can be presented in full life-like color with startling contrast against the drab newsprint pages. General Foods' Jell-O is one of the first to use the new process. It means new effectiveness for advertising build-up and consumer recognition of advertised packaged products.

Clothing in supermarkets? It's already the third largest non-food item and Super Market Institute says 85% of its members want to sell some sort of apparel. *Questions:* From whom to buy and how? How to package and display it? A bulletin from Kastor, Hilton, Chesley & Clifford agency points out that a manufacturer able to answer these questions "can sell one whale of a lot of merchandise quickly."

Do chain stores underestimate the power of the package to sell itself? *Joseph Lorin* of Grey Advertising cites the case of a small New England town, where an independent market moved in and is beating the long-established branch of a national chain. "How? By better service, to be sure, but especially by stocking items which the chain disdains to offer because they aren't sufficiently 'presold.'"

Higher prices should raise dollar sales for most container companies in 1958, says the *Value Line Investment Survey*, but fierce competition will squeeze profit margins. Moreover, says the [Continued on page 36]

Survey, earnings growth has been arrested by heavy integration costs arising from the wave of mergers in the container field, results of which profit-wise have been somewhat disappointing so far. Paper industry is cited for impressive strength during the current recession, with tonnage rate so far for 1958 only fractionally below 1957.

New attention is being turned to the importance of design that sells in the home as well as in the store. (See "The Forgotten Side," MP, June '58, p. 87.) Packaging experts at a recent meeting of the Paraffined Carton Research Council pointed out that when the housewife opens her freezer, refrigerator or kitchen cabinet, she is confronted by almost as myriad a selection of packages as she sees in the supermarket. A product sold but unconsumed has no future. The group concluded that research to discover "what elements motivate the housewife to select certain packaged foods in her kitchen" is one of the greatest needs of food merchandisers.

Diagonal casing of cans and other cylindrical packages may get a big boost from major chains that pack their own brands and buy in large lots from other packagers. Big advantage of method is savings in boxboard and cubage because more containers can nest in a comparable area than in standard right-angle casing. One disadvantage is that cases cannot be packed in traditional multiples of a dozen. However, such chains as Kroger, which is now experimenting with the idea, need not confine themselves to dozens or any other arbitrary count, since they ship only to their own outlets and can adjust their ordering, accounting and billing to any size pack. (For details of this method, see "Diagonal Casing: Why Not?" p. 95.)

New products from research, heavily promoted, hold the hope of the packaged-foods industry, says *Harry A. Bullis*, chairman of General Mills. Last year, General Mills introduced 12 new food products, with continued high expenditure for advertising, promotion and selling; this year, according to Bullis, will bring out more new products, with an advertising budget increased accordingly. The company's merchandising programs place even greater emphasis on good selling and service.

Here's a new way to state the fundamentals of good packaging. A successful package, says *W. A. Rike*, director of package design for Pollock Paper Corp., must achieve four goals: *attention power* (seeing the package among many others), *identification power* (especially the factor of legibility), *acceptance power* (it must create a pleasant and trustworthy effect) and *retention power* (the brand must be remembered).

Transparent-film manufacturers in Canada are satisfied with the results of a nationwide survey that shows Canadian housewives like film wraps for cookies, candies, fruit, vegetables and meats. But they weren't prepared to hear that cookies in a cardboard tray with transparent film over the top are twice as popular as cookies in a plain film bag. Made by TCF of Canada, Ltd., the survey also documented another problem: film-wrapped meats are much less popular among housewives over 30 years of age than among young homemakers.

Look for packaging executives in the Chicago area to form an organization for self-education and the mutual exchange of packaging information. It will probably be patterned after the Ohio Valley Packaging Assn. in Cincinnati (see "The Engineer's View," MP, March, '58, p. 152).

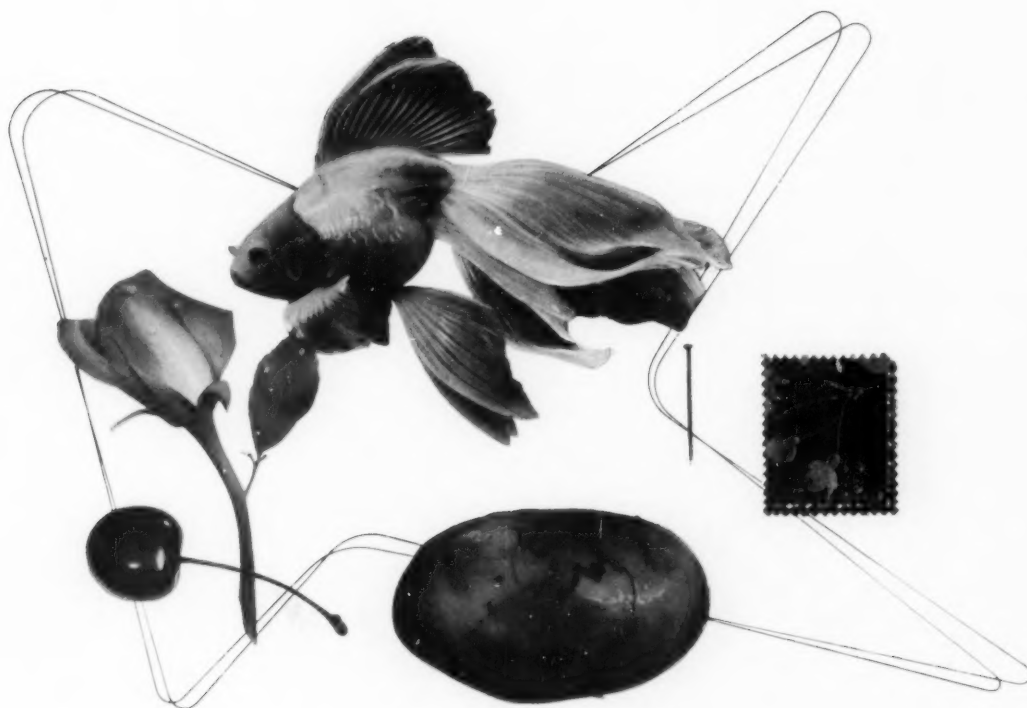
Adhesives will replace nails in holding together the wooden containers of the future if possibilities explored by the U. S. Forest Products Laboratory prove practical. This unit of the Department of Agriculture recently pooled the ideas of 47 experts, including 29 representatives of the adhesive industry, in an effort to solve problems of cost and other "inherent difficulties associated with nailed containers." Consensus was that no present adhesive can do the job, but that new adhesive systems and a modification of container joints may provide the answer.

Background

for

packaging

[Continued from page 35]



THIS, THAT AND THE OTHER . . .

... transparent packaging films play a unique role in protecting and "moving" merchandise of every description. The variety is almost infinite.

As the largest manufacturers of cellulose film in Europe, as makers of B.C.L. polythene film and agents for cellulose acetate films, we are proud of our ability to supply types and gauges to suit every product. We are the world's biggest exporters of cellulose film and can supply the non-moistureproof type in widths of up to 81 inches.

Our scientists, top men in their field, in constant touch with merchandising problems and solutions, work continuously to evolve new and improved

materials such as MXXT cellulose film, which is copolymer-coated by aqueous dispersion, making it *the most moisture-proof packaging film in the world*. Their researches have also produced polythene-coated cellulose film and special films for wrapping such goods as fresh meat, fruit and vegetables, and quick-frozen products.

Colodense Limited, an associated company, have an international reputation as high-quality colour-printers and converters of transparent films.

Whatever your product, we have the best film for it. Whatever your packaging problem, we shall be delighted to hear from you. Why not write to us today?

BRITISH CELLOPHANE LIMITED

Commercial Offices: Henrietta House, 9 Henrietta Place,
London, W.1., England

"Cellophane" is the registered trade mark of British Cellophane Limited in the following countries: The United Kingdom, Australia, Ceylon, Cyprus, Denmark, Eire, Gibraltar, Hong Kong, Iceland, India, Jamaica, Malaya, New Zealand, Nyasaland, Pakistan, Northern Rhodesia, Southern Rhodesia, Singapore, Trinidad and Tobago, Union of South Africa.



Package for Greater Protection and Convenience...in **TUBES!**

Collapsible metal tubes by Wirz are the safe, easy-to-use package for drugs and pharmaceuticals... and an ever increasing variety of additional applications. The design of a particular tube to best meet specific product requirements depends on several important factors.

New approaches to these and other important factors in tube design enable Wirz packaging specialists to add a new dimension of sales appeal to your product. Additional data on design factors and merchandising advantages of Wirz tubes is available in the 32-page Wirz Tube Handbook described below.



Our new Wirz Tube Handbook containing comprehensive data on every aspect of tube design, manufacturing and merchandising is now available. Write for a copy on your company letterhead.

COMPATIBILITY of the product and the tube metal... aluminum, tin, lead or special alloy... is an important consideration.

TUBE SIZE—determined by the volume to be packaged.

TUBE OPENING—many sizes and types to choose from, depending on specific product requirements.

TUBE CAP—variety of sizes, types and designs are available.

TUBE DECORATION—unlimited color and design possibilities to provide product identification... added package sales appeal.

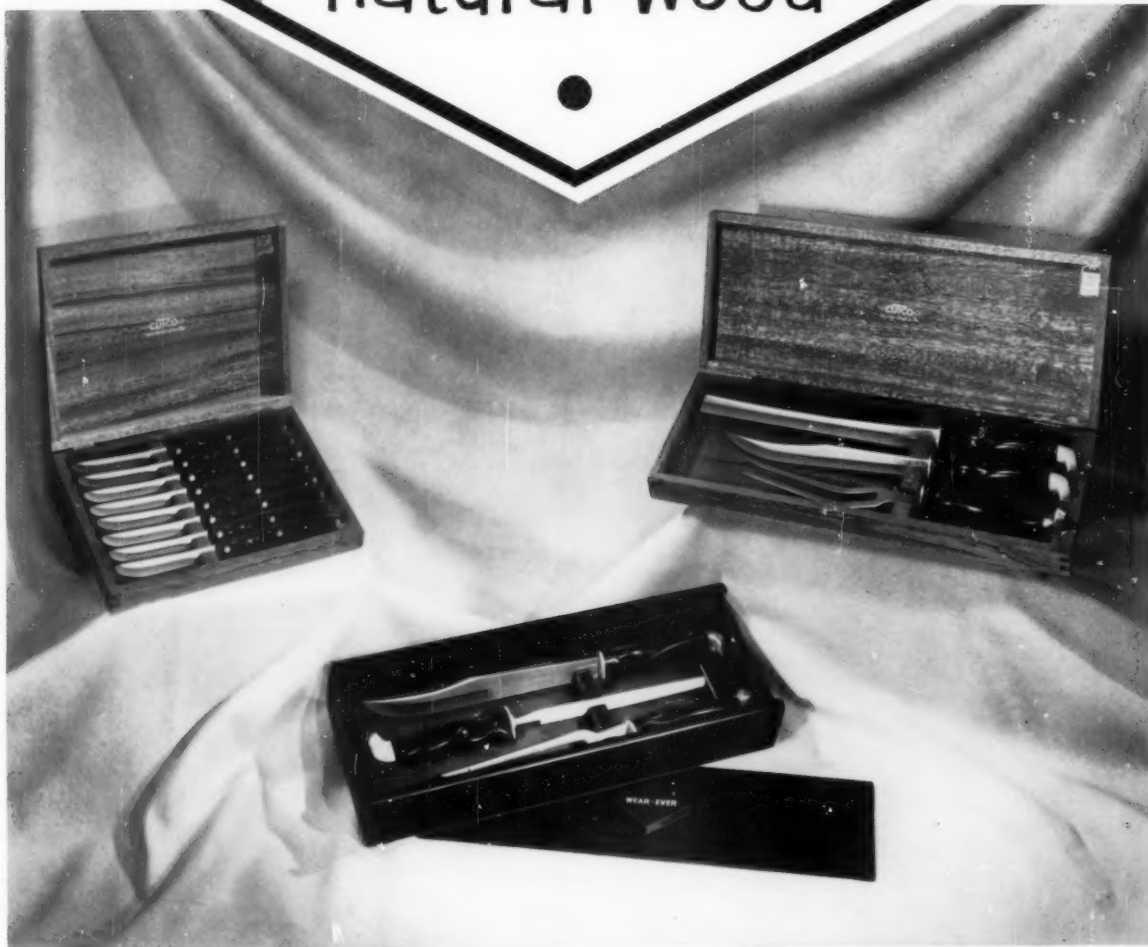
A.H. **WIRZ** *Inc.*
4TH & COLE STS., CHESTER, PA.

RIGID CANS AND IMPACT EXTRUSIONS BY
AMERICAN EXTRUSION DIVISION

NEW YORK • CHICAGO • LOS ANGELES • MEMPHIS • HAVANA

NOTHING SELLS LIKE

natural wood

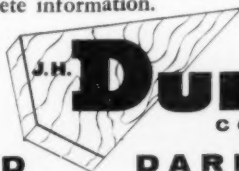


NATURAL WOOD FOR prestige

To add prestige, natural wood is the natural choice. To add beauty, too, and protection, Wear-Ever Aluminum, Inc. chose these genuine African mahogany and ebony-finished chests by Dunning for its Cutco and Wear-Ever lines of fine cutlery.

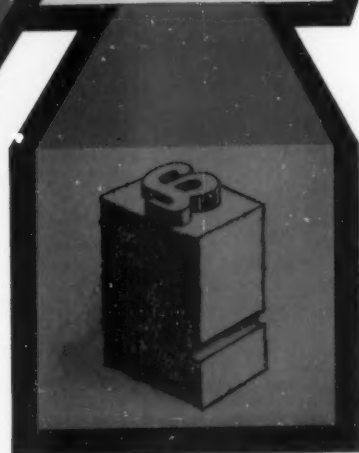
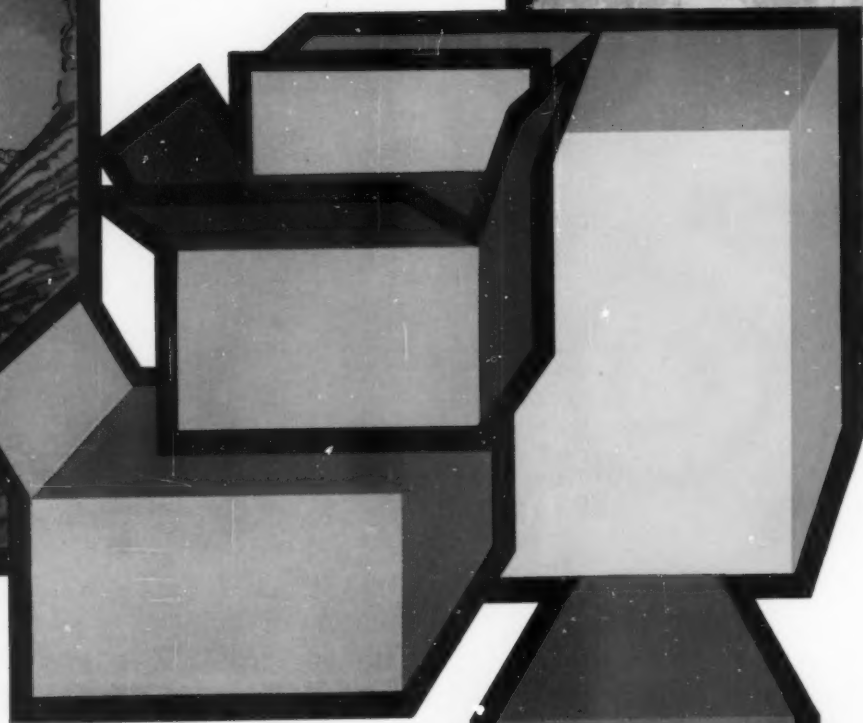
Whatever your sales appeal, it can be enhanced by the tasteful touch of wood packaging. Whatever the character of your product, Dunning can help you express it with the appropriate package or display. Select from an unlimited variety of woods, textures, grains, and finishes; add prestige and protection at lowest cost. No other packaging material is so versatile or appealing. And in the skillful use of fine woods, no one is so experienced as Dunning.

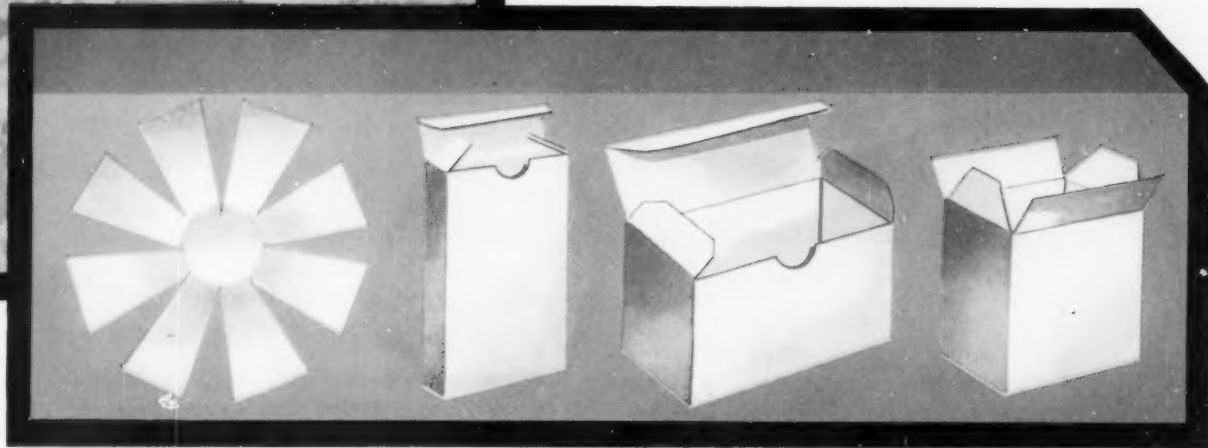
Like to see more dramatic applications of wooden boxes, cases and displays, gift and specialty items? Write today for complete information.



1950 POST ROAD

DARIEN, CONNECTICUT





There's always an example of excellence
...in the graphic arts of packaging, it's GAIR!

Accomplishment, in printing and the graphic arts, can be represented by everything from prehistoric designs to the casting of type slugs. Yet in our modern economy, there is no more important example than the folding carton. Gair folding cartons pass the severe test of competitive, display merchandising.

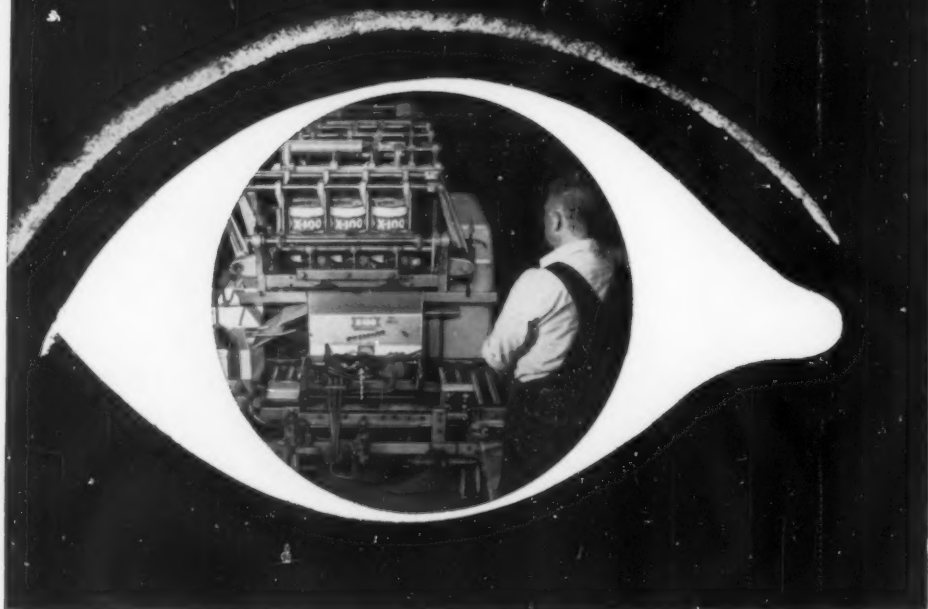
For Gair's talented graphic designers and superior printing facilities produce the finest graphic job in the industry. Whether you need the bright, bold impact of gravure, or any rich, color-combination of the printing processes — Gair folding cartons sell your product better with beauty!



GAIR creative engineering in packaging

BOXBOARD & FOLDING CARTON DIVISION OF CONTINENTAL © CAN COMPANY 530 FIFTH AVENUE, NEW YORK 36, N. Y.

WHEN YOU SEE PACKAGING EFFICIENCY
YOU SEE STANDARD-KNAPP EQUIPMENT




PACKER PROTECTS BIG PACKAGE APPEARANCE DURING CASE LOADING

Five-quart cans filled with motor oil are big, heavy and therefore unusually susceptible to damage. Case loading such cans requires equipment with deft, sure and smoothly coordinated motions—otherwise package appearance will suffer.

This is precisely the kind of service the Standard-Knapp Model 830-3 Packer is providing at Shell Oil Company's new lubricant canning plant at Wood River, Ill. It is loading those large, weighty cans vertically into cases at the rate of more than 100 cans a minute—with careful, cushioned movements that bring cans and cases together in a smooth, continuous flow.

If package appearance is important to you, then you want Standard-Knapp equipment. *We cordially invite your request for literature on our packers, labelers, case gluers and sealers, carton make-up units.*



EMHART

MANUFACTURING COMPANY
STANDARD-KNAPP DIVISION
PORTLAND, CONNECTICUT



Fifty bags per minute is automatic packaging rate on modified "make and fill"-type machine.



Each "V for 1" single portion food bag contains 2½ ounces. Bags are packed 12 to the carton.



Just drop and boil . . . then open and serve. Contents of bag are pre-seasoned and pre-buttered.

East Coast Marketers and Spencer Chemical Company announce the frozen food industry's **SECOND MAJOR DEVELOPMENT:**

The Low-Cost Boilable Food Bag!

Spencer-pioneered boilable polyethylene is key to improved bag that costs only 1/5 as much as other boilable bags. New single portion bag brings vegetables to table with garden-fresh flavor, color and nutrition . . .

At last the low-cost boilable food bag is here! It's the result of months of joint research by East Coast Marketers in Salisbury, Maryland, and Spencer Chemical Company of Kansas City. One enthusiastic food broker calls it "the first major development in frozen vegetables since Clarence Birdseye began freezing them!"

Instead of the older-type boilable laminates, East Coast's "Vegetables for 1" bag uses a laminate made from paper and "Poly-Eth Hi-D," the low-cost boilable polyethylene resin developed by Spencer Chemical Company.

Besides cutting costs 80%, "Poly-Eth Hi-D" does not tend to separate from its laminated partner and fill up with globules of water that gush out over the food when the package is opened.

In restaurants using these single-portion boilable food bags, the food inside never touches the water it's boiled in. When an order reaches the chef, he simply picks the right bag

from the freezer, drops it in boiling water for 8 to 10 minutes, tears open the bag, and serves. As a result, vegetables come to the table with garden-fresh flavor, color and nutrition, because the goodness of the food has been boiled *in* instead of *out*.

Servings can be pre-flavored, pre-buttered and steam-cooked with the utmost precision. Individual servings mean a much greater variety of food can be stored in the freezer at any given moment. They end left-over waste and loss by shrinkage during boiling.

These bags offer exciting prospects, not only to restaurants, but also to employee cafeterias and large institutions. They are ideal for drive-ins, quick lunch counters and odd-hour eating establishments. And retail packs for the housewife should appear soon.

If you're a food packager, this new boilable bag may be a simple and inexpensive way to give your product a tremendous new advantage. If you're a producer of film or laminates for

packaging, find out the extra benefits that "Poly-Eth Hi-D" can offer your customers. Use the coupon below for free information.

SPENCER
CHEMICAL CO.
KANSAS CITY 5, MO.

Poly-Eth Hi-D
by
SPENCER

MAIL THIS COUPON TODAY!

Spencer Chemical Company
Market Development Group
500 Dwight Bldg.
Kansas City 5, Mo.

Please rush me the materials checked below:

- ☐ More information about suppliers of single portion boilable food bags.
☐ More information about suppliers of film made from "Poly-Eth Hi-D."

Name

Firm

Address

City State

*"Poly-Eth Hi-D" is a registered trademark of Spencer Chemical Company.

Here's the easy way to get quick help with packaging problems:

Use your Encyclopedia Issue!

It's a fact-crammed workbook

for day-to-day problem solving.

EXAMPLE: How to plan your package?

1. See section "Planning and Developing the Package" for sound approaches to the many-faceted problem.
2. Next, consult the Advertisers' Index on the first page of this section for advertising of packaging consultants, contract packagers and materials suppliers.
3. Then turn to Buyers' Directory for state-by-state listings of: packaging designers, contract packagers, engineering consultants, custom embossers and laminators, paper lithographers, independent research and testing laboratories, and sample and package distributors.
4. Check the "Review of Free Literature" insert, select all possible helpful publications and send for them with enclosed post cards.

EXAMPLE: How to improve packaging line efficiency?

1. Read the section "Efficiency on the Packaging Line" for a complete picture of the factors involved.
2. Then turn to the Advertisers' Index on the first page of this section and select ads whose contents bear on your problem.
3. Get further information in the Buyers' Directory: names and addresses of engineering consultants, machinery manufacturers and service organizations.
4. Look through the Encyclopedia insert "Review of Free Product Literature", select pertinent free publications and write for them on the conveniently enclosed post cards.

EXAMPLE: Which packaging machinery to buy?

1. Read section "The Machinery of Packaging" for all the fundamentals.
2. Then check the Advertisers' Index—on the first page of the section—for adjoining ads on filling equipment, cartoning machinery, unscramblers, etc.
3. Secure additional names and addresses of suppliers from Buyers' Directory rosters: capping machine manufacturers, makers of conveyors, labelers, bundlers, etc.
4. Examine insert "Review of Free Product Literature", pick out publications you want and send for them with enclosed post cards.

EXAMPLE: Where and how to use aerosols?

1. Get detailed application information in the "Aerosols, Valves and Propellents" section.
2. Then, for ads by aerosol component suppliers, see the Advertisers' Index on the section's first page.
3. Next, examine the Buyers' Directory for names and addresses of suppliers of aerosol containers, propellents, valves, loading machines, etc.
4. Check through "Review of Free Product Literature" insert. Select desired brochures and leaflets and write away for them on the enclosed post cards.

The Encyclopedia is expressly designed to help you solve your problems. Reach for it next time you need help and see how valuable it can really be!

MODERN PACKAGING ENCYCLOPEDIA ISSUE

... for fast, accurate answers to packaging problems



PACKAGING COMMITTEE

PRODUCTION

PACKAGE DEVELOPMENT PRODUCT PLANNING
QUALITY CONTROL FILLING & PACKING

SALES

INTERNATIONAL MERCHANDISING
COMMERCIAL DEVELOPMENT
PACKAGE DESIGN

ADMINISTRATIVE SERVICES

PURCHASING
SALES SERVICE

PACKAGING COMMITTEE AT LEDERLE




With ethical drugs, there's no margin for error—either in product or package. At Lederle Laboratories Division, American Cyanamid Company, where "packaging" means specifying, buying and handling millions of containers every month, this nine-man committee has authority in a particularly complex area.

Lederle uses thousands of different types and sizes of containers, creating special problems of inventory, package engineering, mechanization, quality control and delivery. It is vital, the Committee recognizes, to work with suppliers who are dependable, knowledgeable, and specialists in their field.

Federal, one of the four largest makers of folding boxes, has been a Lederle supplier for many years. Perhaps our kind of experience can be an asset to your packaging committee also.

FEDERAL PAPER BOARD COMPANY, INC.

NATIONAL FOLDING BOX DIVISION • MORRIS PAPER MILLS DIVISION • EXECUTIVE OFFICES: BOGOTA, N. J.
OPERATING 16 PAPERBOARD MILLS AND FOLDING BOX PLANTS



R·C·

Metal-End Telescope Cans

now cost less than ever!

Good News for Quantity Users

If you use large quantities of telescope cans, here is important dollar-saving news for you! Through new manufacturing techniques, R. C. Can is now able to bring you a brand-new price schedule. Here are the R. C. Metal-End Telescope Can specifications:

- Any size from $\frac{7}{8}$ " to $6\frac{5}{8}$ " diameters
- Any length to 32"
- Spiral wound with metal ends
- Can be telescoped (divided) at any point
- Wide variety of greaseproof or moistureproof wrappings and linings.
- Spiral-wound labels can be applied with perfect label registration.

...and Don't Forget These Other Low-Cost R. C. Telescope Cans...

- Cuff End
- Full Telescope

R·C·

CAN COMPANY



Write Your Nearest R. C. Factory For Further Information and Prices.

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Sold – and Still Selling

This Mullinix package "billboards" Morrell Pride bacon at the point of sale. The unique "Peek-A-Boo[®]" flap protects bacon from damaging light rays and keeps it looking fresher... better.

But, this package keeps right on selling in the home. It takes up less space in the refrigerator and is easy to open and re-close without mess. The bacon is protected at all times and... because of this, the last slice tastes as good and fresh as the first.

The patented Mullinix package is another Western-Waxide flexible packaging development. Our packaging research laboratories, combined with excellent graphic arts facilities can develop, create and produce a package that will *sell and keep right on selling* for you.

*Increased Sales
... by Design!*

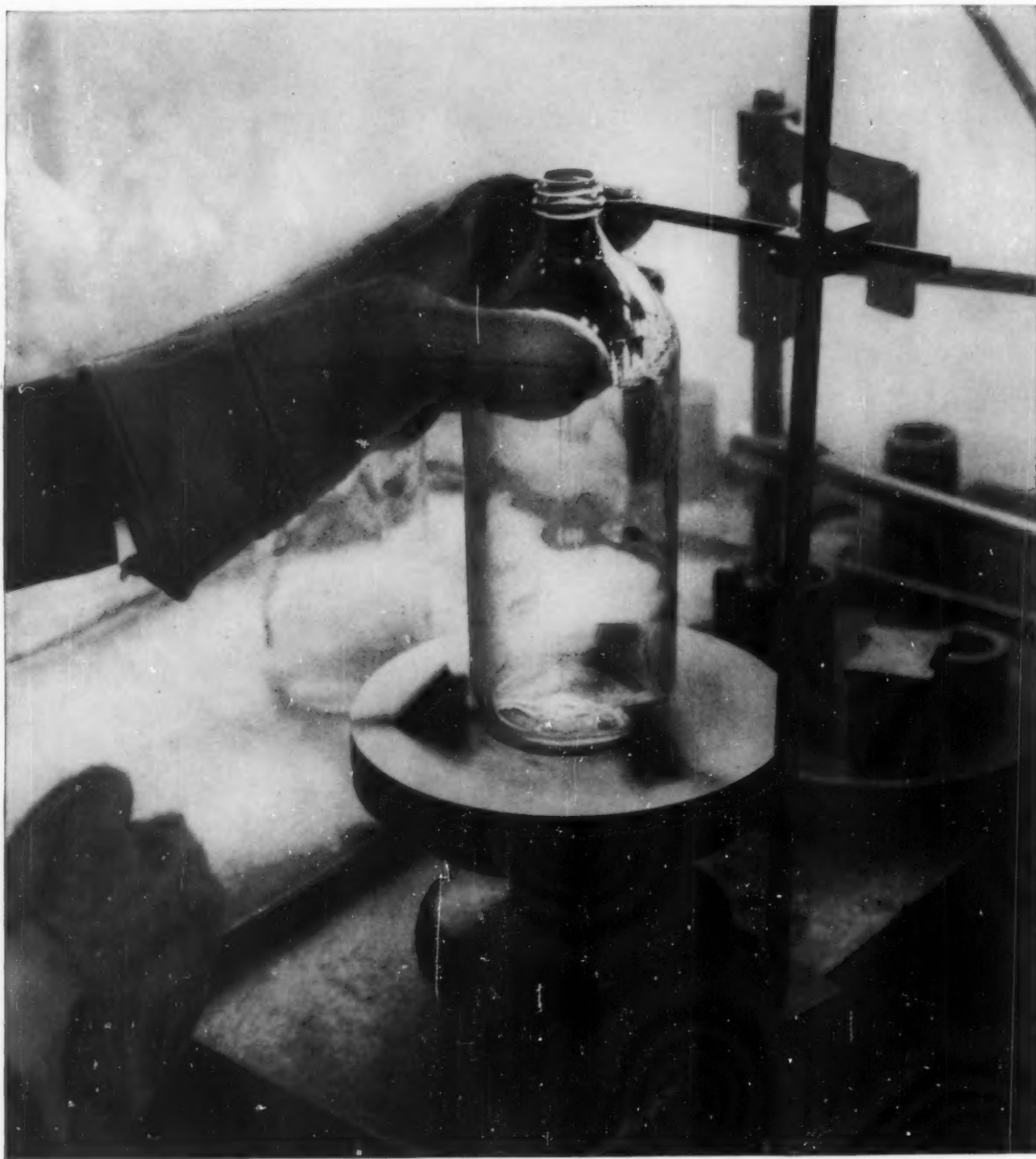


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Headquarters Office: 2101 Williams St., San Leandro, Calif. • Plants and Sales Service Offices in Principal Cities of the United States

Manufacturers and converters of plain and printed waxed paper • foil • foil laminates • polyethylene coated paper and poly-film laminates • films • bags • pouches and other specialized flexible packaging materials

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what every label user
should know about
KLEEN-STIK®
pressure-sensitive
Labels



removable or permanent



KLEEN-STIK

gives you your choice of just the right adhesive for long-lasting, tamper-proof adhesion . . . or easy, clean removal.

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Roll Labels plus automatic Dispensers add up to the world's fastest, most economical hand labeling method! Dispensers available in a variety of models for continuous or intermittent operation.



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comes in a wide variety of special Label Stocks, including rich Gold and Silver Foils, high-gloss Kromekote, fiery fluorescent, and others . . . as well as economical, all-purpose Coated Litho.



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WE DO NO PRINTING — we merely manufacture adhesive-coated stock for your regular Label Printer.

Celanese Acetate Transparent Film
triples the value of fruit packaging
...cuts its cost!



There's nothing to equal the combination of advantages you get when you package with Acetate Transparent Film!

SPARKLING. NON-FOGGING CLARITY! In window boxes, bags and overwraps, Acetate does more than give you sparkling, selling transparency—much more.

PERMEABILITY! The high gas permeability of Acetate does away with fogged packages . . . gets rid of unwanted moisture . . . helps living produce breathe and thus ripen naturally . . . retards mold and other infestation.

LONG LIFE! Acetate retains its original strength and fresh look—in storage or on the counter . . . does not dry out or become brittle . . . does not become limp when wet.

ECONOMY! Acetate holds down the cost of transparent packaging—both by its moderate initial cost and by the long life protection it gives to package and produce.

Write for Technical Bulletins F3D and F3F, and learn more about the unbeatable advantages of Celanese Acetate Film for packaging fruits and other fresh produce. Celanese Corporation of America, Plastics Division, Dept. 108-H, 744 Broad Street, Newark 2, N. J.

Canadian Affiliate: Canadian Chemical Co., Limited, Montreal, Toronto, Vancouver.

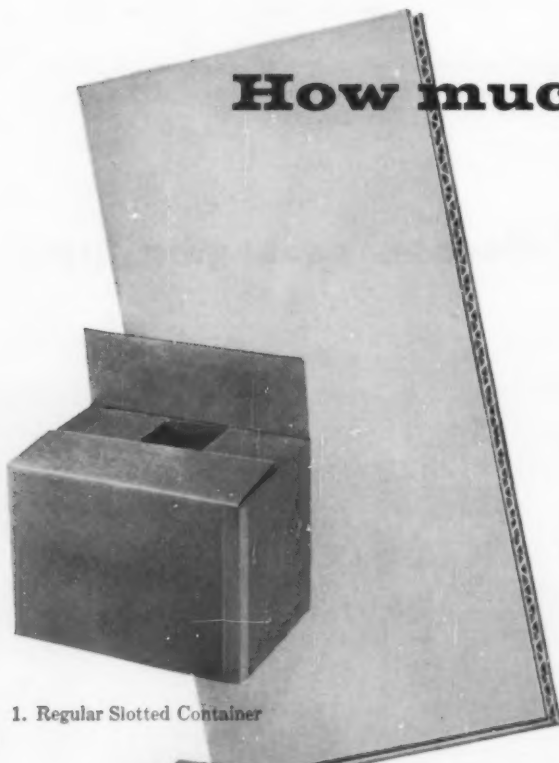
Export Sales: Amcel Co., Inc., and Pan Amcel Co., Inc., 180 Madison Avenue, New York 16.

Celanese®

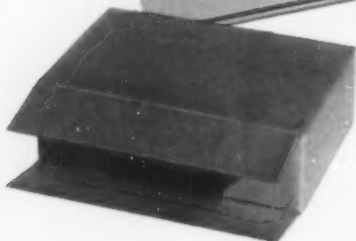
Acetate... *Celanese* packaging films



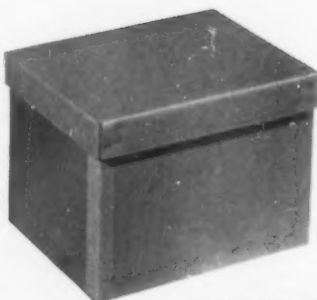
How much tailoring does



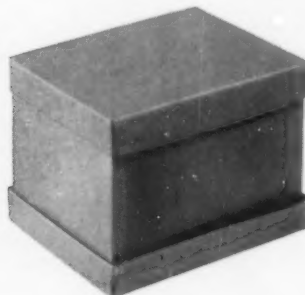
1. Regular Slotted Container



2. Special Flap Slotted Container



3. Half Slotted Container



4. Double Cover Box

Picking the proper corrugated shipping carton is like buying a suit. Rarely will a ready-made, "off-the-shelf" unit fit perfectly. Some modifications usually are needed; possibly even a complete custom-built job. It all depends on your product and how it is normally handled and shipped.

You may find, for example, among the representative basic box types shown here one that's just right for you. Or perhaps further structural design work would enable you to ship more efficiently and economically.

Talk it over with your local Union Box representative. He's an expert at pin-pointing all the pertinent factors. And at recommending or helping develop the most practical box for your needs.

1. Regular Slotted Container

Probably the most popular type used today. Fits all standard automatic packing and sealing units. All flaps the same length; outer flaps meet in center. Single- or double-wall construction is used, depending on degree of

about types of Union Boxes

your shipping container need?

protection your product needs.

Similar to the "Regular Slotted" is the "Center Special Slotted Container". Top and bottom areas are stronger; both inner and outer flaps meet at box center.

2. Special Flap Slotted Container

There are two kinds of "Special Flap" boxes. In one, the top and bottom flaps partially overlap. In the other (shown left) they overlap completely, providing double thickness at top and bottom. When strapped shut, flaps override each other, form snug, non-butting closure. If glued, adhesive covers full flap, assures extra safe, durable bond.

3. Half Slotted Container

Bottom is similar to Regular Slotted Container. Flanged cover is sent as a blank for set-up by shipper. Good as combination shipping shelf package. Without cover, used for batteries, other heavy, small items. Also, as a transfer file or stock box.

4. Double Cover Box

Ship heavy items where strapping is necessary? This three-piece box with telescoping covers might be just the ticket. Excellent stacking strength; strong covers take rough handling. Often used in large sizes for bulk packs on pallets.

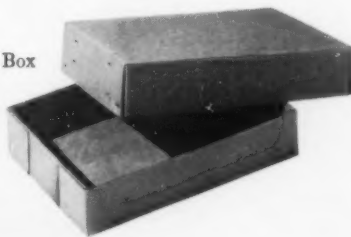
5. Telescope Box

You'll probably need a box like this if you ship flat items such as paper, books, advertising material, etc. It protects with a double build-up of sheet around sidewalls and corners which also gives you maximum stacking strength. May be constructed as a full telescope (see below) or as a partial telescope.

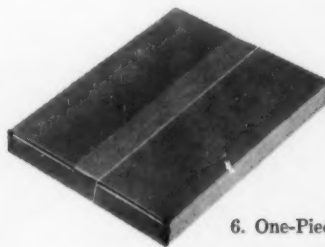
6. One-Piece Folder

Another excellent shipper for books, catalogs, etc. Packs and closes quickly and easily. Mostly used for parcel post and express shipments. Also made up as "One-Piece Special Folder" where all flaps meet in center.

5. Telescope Box



6. One-Piece Folder



Write for new, informative booklet, "Types of Corrugated Boxes."

UNION BOXES

UNION BAG-CAMP PAPER Corporation

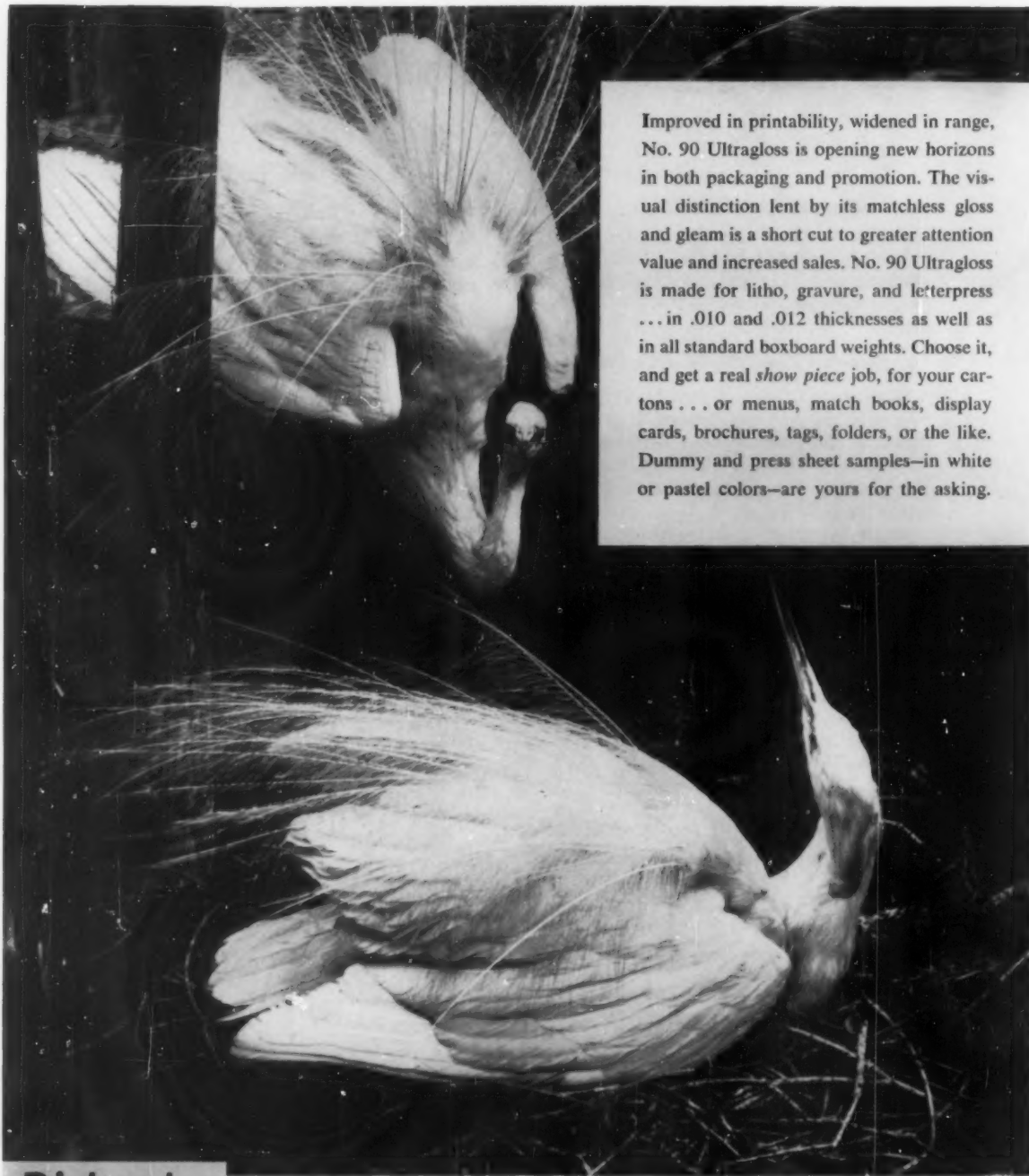
233 BROADWAY, NEW YORK 7, N. Y.

Factories: Savannah, Ga., Trenton, N. J., Chicago, Ill., Lakeland, Fla.

Sales Offices: Eastern Division—1400 E. State Street, Trenton, N. J.
Southern Division—P.O. Box 570, Savannah, Ga.; P.O. Box 454, Lakeland, Fla.
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Glazed Finish Carton and Printing Grades
With a Beauty Both Fine and Rare



Improved in printability, widened in range, No. 90 Ultragloss is opening new horizons in both packaging and promotion. The visual distinction lent by its matchless gloss and gleam is a short cut to greater attention value and increased sales. No. 90 Ultragloss is made for litho, gravure, and letterpress ... in .010 and .012 thicknesses as well as in all standard boxboard weights. Choose it, and get a real *show piece* job, for your cartons ... or menus, match books, display cards, brochures, tags, folders, or the like. Dummy and press sheet samples—in white or pastel colors—are yours for the asking.

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PRODUCTS

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Ridgefield, N. J.

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Representatives • Detroit—Joseph P. Giroux • Los Angeles—Norman A. Buist • Philadelphia—Philip Rudolph & Son, Inc. • St. Louis—A. E. Kellogg

New high-gloss flexographic ink combines low viscosity and high color strength at all press speeds

BBD Speed-E-Brite

for all popular packaging films

Now BBD adds another great ink to its long list of "firsts." Based on an entirely new solvent system, SPEED-E-BRITE provides almost unlimited versatility and a unique combination of quality advantages for the film and foil converter. Here are the features that make SPEED-E-BRITE a truly remarkable ink:

***COMPATIBLE** with NATURAL or BUNA "N" RUBBER

You can use SPEED-E-BRITE with either natural or synthetic (Buna "N") rubber plates and rollers at printing speeds to 350 fpm. No need to switch inks for different rubbers nor to re-make plates for re-runs. At printing speeds over 350 fpm the proper solvent mixture requires use of Buna "N" plates and rollers only.

HIGH-GLOSS FINISH • SPEED-E-BRITE dries to an extremely glossy and brilliant finish that has good opacity too. On slicker films it is hard to tell which side is printed.

LOW VISCOSITY, HIGH COLOR STRENGTH This unusual combination of desirable qualities is an exclusive feature of SPEED-E-BRITE ink. It has uniformly low viscosity in *all* colors which is controlled within very close limits for optimum performance on the press, and its depth of color remains at the same high level regardless of printing speed.

WATER-RESISTANT, BLOCK-RESISTANT SPEED-E-BRITE prints take to water like a duck, remain anchored even after long periods of immersion. And SPEED-E-BRITE's block point is far higher than that of conventional inks, both ink-to-ink and ink-to-stock.

SUITABLE FOR HIGH OR LOW SPEED EQUIPMENT • SPEED-E-BRITE has an unusual multi-speed range. The appropriate use of solvents

enables you to use this ink at low speeds (to 150 fpm), medium speeds (150-350 fpm) and high speeds (over 350 fpm) without sacrificing color strength or working properties.

NON-SOURING • Even in humid weather SPEED-E-BRITE doesn't thicken in the fountain, doesn't foam either. It is less sensitive to temperature changes than other co-solvent inks too.

LONGER MILEAGE • Traditional BBD extra color-strength, combined with unusually low viscosity, enables SPEED-E-BRITE to cover up to 30% more area per pound of ink.

VERSATILITY • SPEED-E-BRITE is right for POLYETHYLENE (treated), "MYLAR" and other POLYESTER films, *all* types of CELLOPHANE (plain, semi-moistureproof, moisture-proof and polymer-coated) and ALUMINUM FOIL (washed). Also, for certain applications, may be used on Saran, Polystyrene and acetate films.



For FREE "SPEED-E-BRITE" Technical Data Sheet and Sample prints contact your nearest BBD office or write to Bensing Bros. and Deeney, 3301 Hunting Park Avenue, Philadelphia 29, Pa.



Bensing Bros. and Deeney
Flexographic Ink Specialists
Manufacturing plants in
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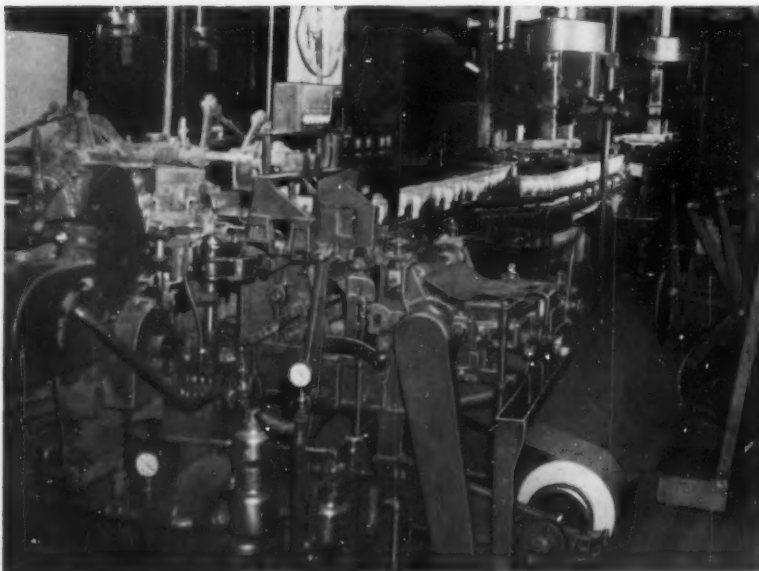
ALL READY IN A "JIFFY"

- Ready mix pioneer shows the way
- "Automatically" expands production with Pneumatic

Growth, at Chelsea Milling Company of Chelsea, Michigan, has been steady, substantial, and anything but haphazard. It has been carefully and most successfully planned, step by step, since Chelsea Milling pioneered with its first prepared "Jiffy" product—"Jiffy" Biscuit Mix—27 years ago.

Ninety-five percent of the firm's output is now in ready mixes. One hundred percent of the packaging load for the production of the eleven "Jiffy" mixes is the responsibility of Pneumatic automatic packaging equipment . . . including machines for carton forming, lining, weighing and top closing.

The sounder design, more precise construction of Pneumatic equipment pays off in more dependable operation and lower maintenance costs. These things Chelsea Milling and many others know full well, from first hand experience. With their first Pneumatic order they also discovered that Pneumatic invariably makes good on its promises of performance, delivery and all the many considerations that are part of such a purchase. Pneumatic's reputation in this respect is well



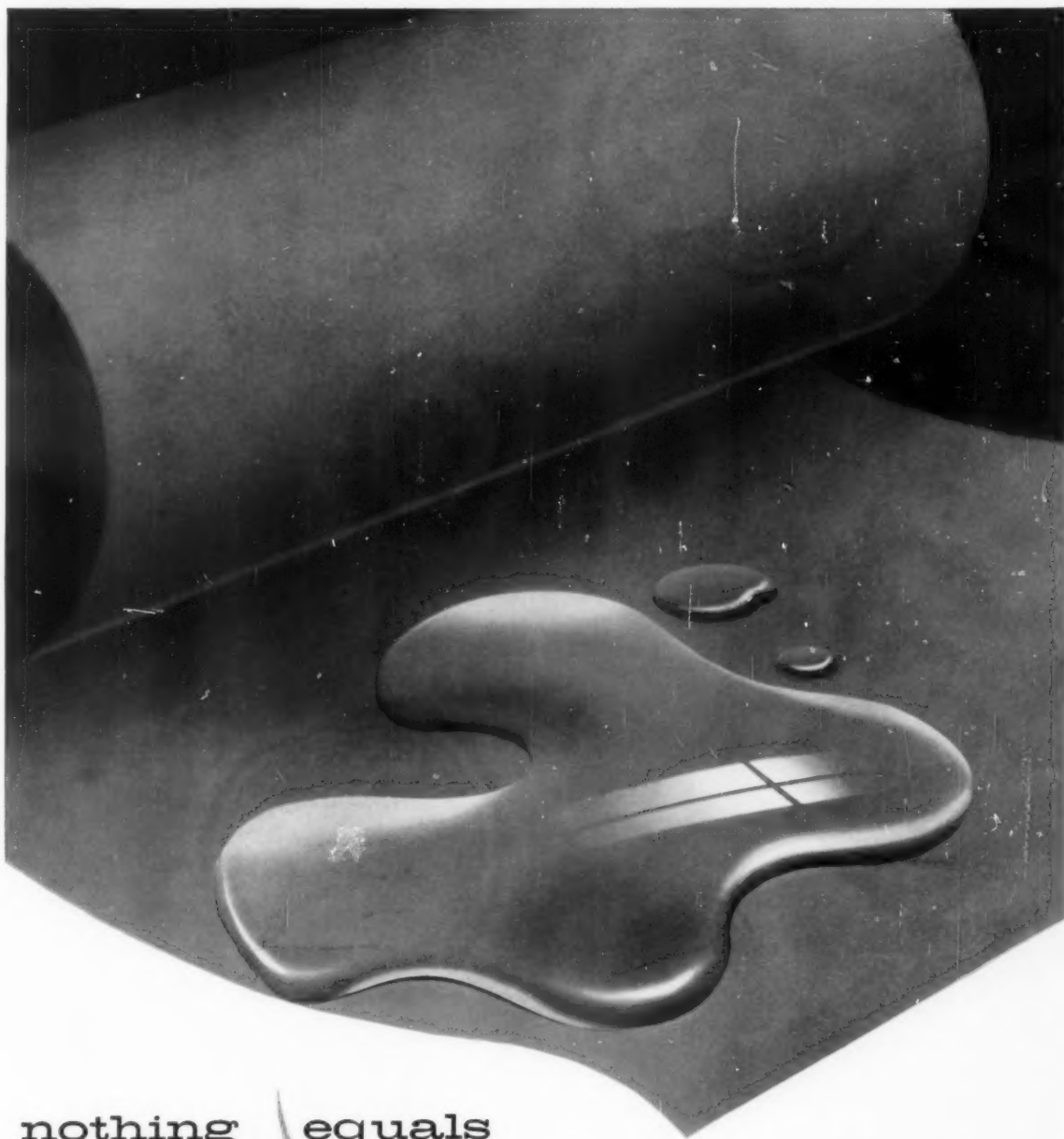
One of several Pneumatic Double Package Maker lines in operation at Chelsea Milling plant.

known—and highly important for you to take into account when your own company is buying.

★ ★ ★

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82 Newport Ave., Quincy 71, Mass.
Also: New York; Chicago; Dallas; Seattle;
San Francisco; Los Angeles; Leeds, Eng-
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nothing equals

Piccopale

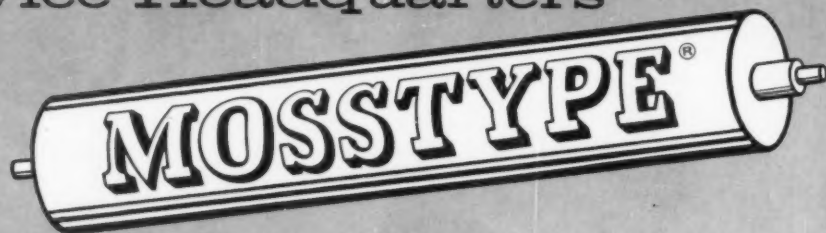
for waterproofing

Pale in color and chemically unique, **Piccopale**, a polymerized petroleum resin, is versatile in its many uses. **Piccopale Resin** is inert and heat stable, and its hydrocarbon structure assures the utmost in water and moisture resistance.



PENNSYLVANIA INDUSTRIAL CHEMICAL CORPORATION
Clairton, Penna.

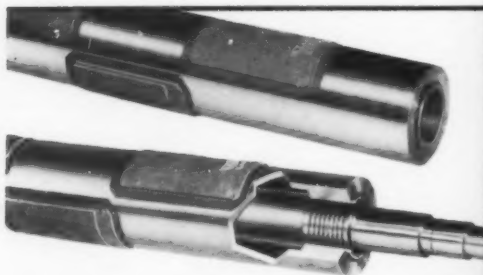
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for Rubber Plate Printers

RUBBER PLATES and DESIGN ROLLERS

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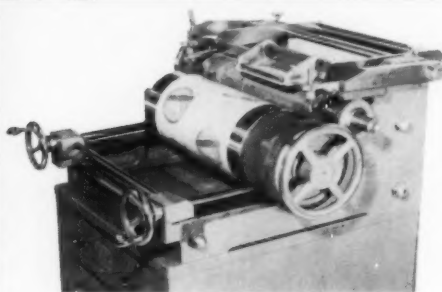
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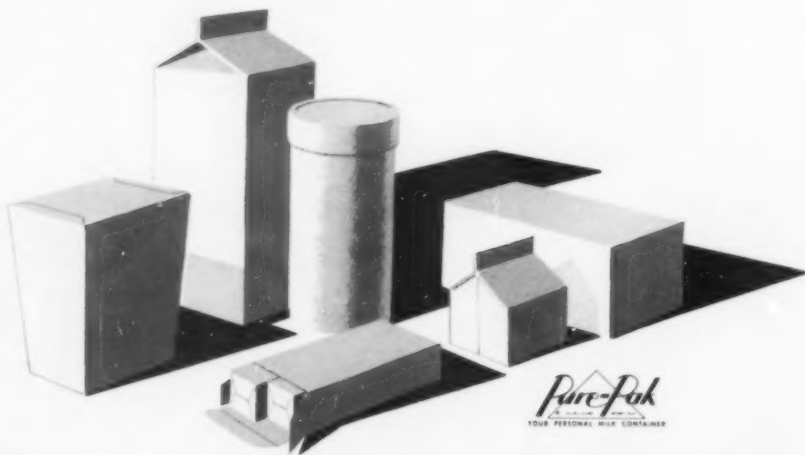
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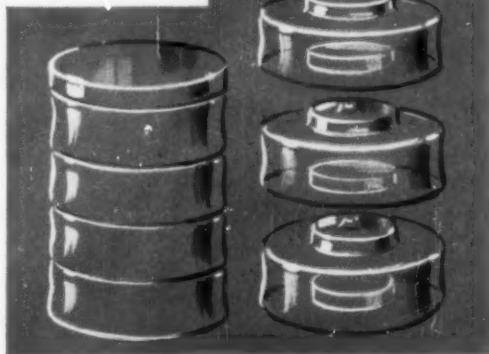


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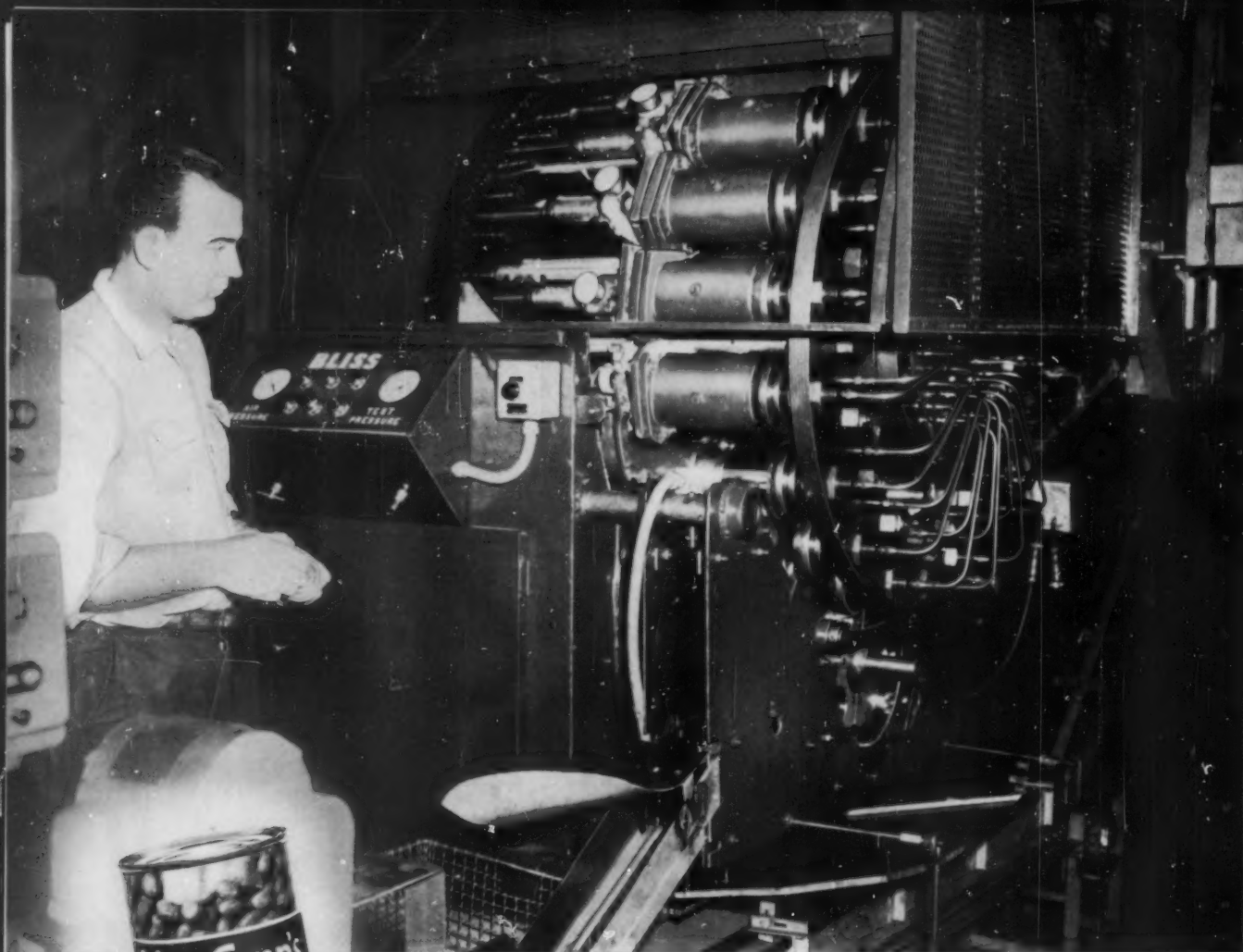
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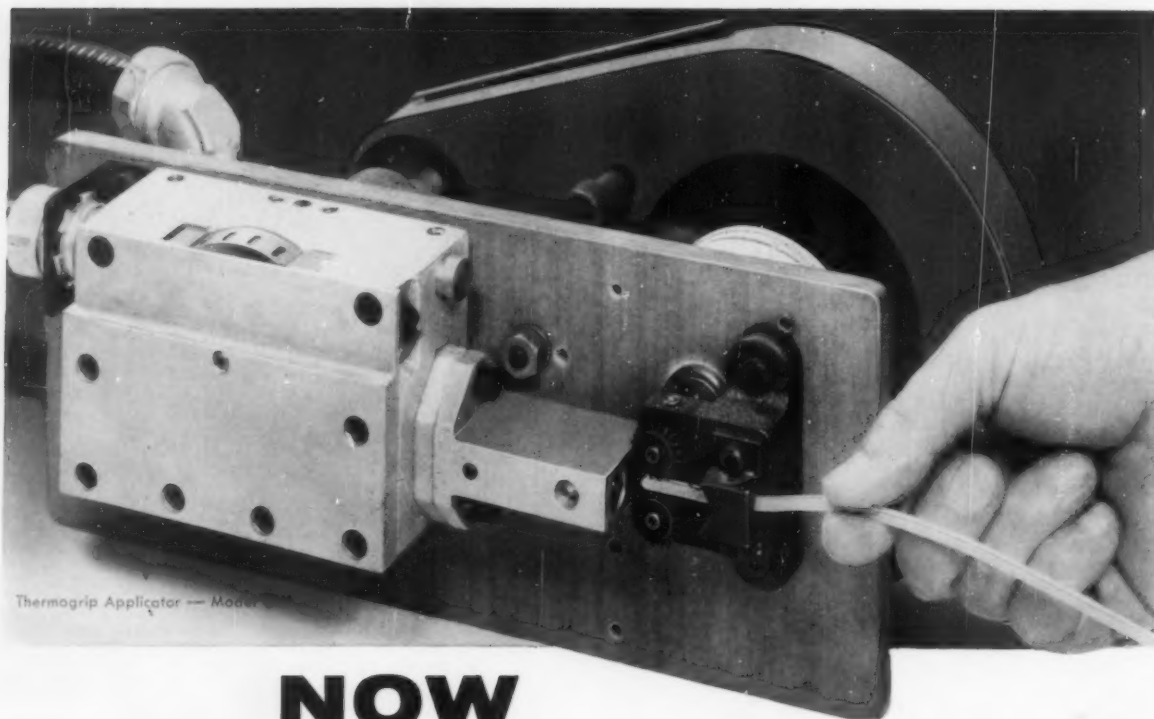
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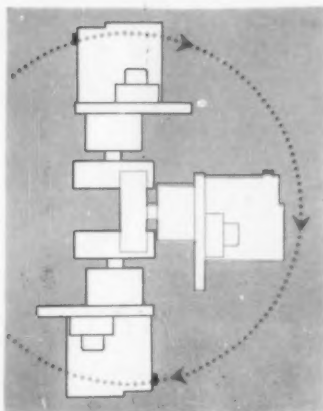




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at Any Angle!



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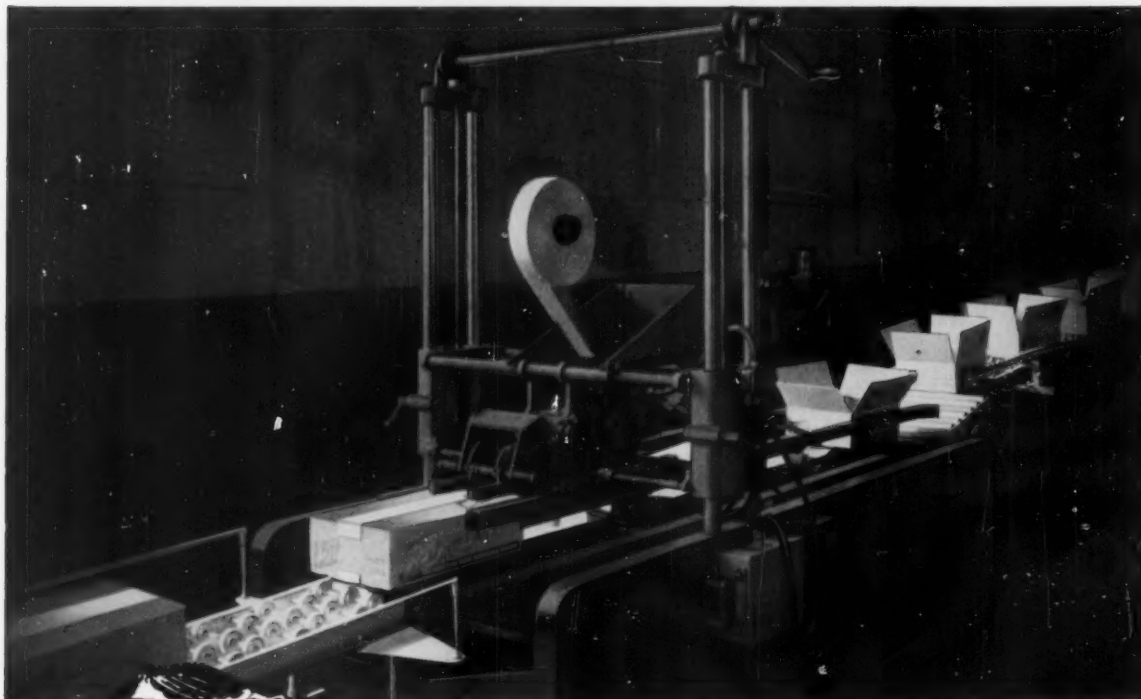
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Only Machine that Automatically Tapes Over 2000 New or Re-use Cartons Per Hour

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Yes, they're convinced they're getting it—or they wouldn't remain our customers year in and year out! They're careful buyers, hard to please, and they can't be fooled (not that we'd ever try!).

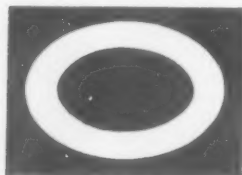
We keep them happy by knowing how to give them what they want . . . and we know through both long experience (32 years of it), and by careful research.

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*The First
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RISDON

Micro-Mist* Valves



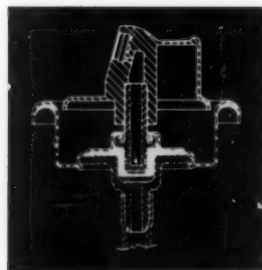
Johnson's new "PLEDGE" is a shining example of the dispensing ability of the Risdon Micro-Mist valve. As housewives are delightedly discovering, a gentle push on the actuator sends out a wide, soft cloud of emulsified wax which evenly coats the surface. A light wiping produces a high shine.

This Johnson formulation requires a three-phase dispensing system. The Micro-Mist valve (a Risdon 5210 valve topped with the patented Micro-Mist actuator) plays a vital part in this system. It mechanically breaks the solid stream of liquid into a fine, atomized mist as it leaves the spray orifice.

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There's a Risdon Valve for Virtually Any Pressurized Product Packaged in Glass, Metal or Plastic.



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Oh Boy... Burgerbits!

Net Wt. 4 oz.

PACKAGE ACTUAL SIZE

Here's another example of Hermetet's almost countless packaging applications—in action. The Hermetet siftproof carton, used as a self-mailer, was sent nationwide without additional mailing protection or the usual kraft mailer carton. This permitted Standard Brands regular consumer package to be seen by additional thousands of potential customers en route.

Hermetet is a lined carton. By selecting a Hermetet carton and the proper liner, you can enjoy greater product protection. Grease, moisture, odor, light leakage are no longer packaging problems. And Hermetet is designed for completely automatic or semi-automatic packaging operations.

For additional information about this, one of the most exciting packaging developments of the century, call or write Department 916.

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Old Flemish papers, generally handmade from flax or "ragg," are admired for their perfection even today.

But it still took the genius of Van Dyck's etching needle to convert it into a 17th century masterpiece.



Skill and talent are the priceless ingredients that create a masterpiece from paper . . . whether a museum piece, or a profitable item of trade.

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August 1958

Featured in this issue . . .

For polyethylene, six months of startling progress

Just six months ago, MODERN PACKAGING concluded a special series of articles posing the question: "What About Polyethylene?" in which it was shown that while this film had become the least expensive transparent wrapping material, serious problems remained, including a definite lag in machinery capable of handling and sealing it. Since then, remarkable progress in overcoming these problems has been made by both film and machinery suppliers. No less than four new low-, intermediate- or high-density films have been introduced, with improved properties ranging from greater clarity to more stiffness and easier sealing. And three new overwrapping machines with significantly increased speeds have joined the two limited machines that at the beginning of the year were available to handle polyethylene film. For an interim report on the rapid advances in the dynamic field of polyethylene-film packaging,

Don't miss "Polyethylene Progress," p. 75

Steel containers: new beauty and utility make the future bright

Despite the hammering body blows of healthy competition—from fibre drums, multiwall shipping sacks and the reconditioned products of its own manufacture—the steel-container industry today stands at the highest sales level in its long history. Credit steel's obvious merchandising advantages of strength and long life, of course. But credit other and more recent factors as well. These include the application of multicolor lithography to produce 55-gal. drums that are as beautiful as biscuit tins. And—less apparent, but equally important—makers of steel drums and pails have come up with improved designs and manufacturing methods that make possible the use of lighter gauges of steel, as well as with improved coatings, linings and fitments for greater protection and easier use.

See this month's Supplier-Industry Survey, "Steel Containers," p. 86

Diagonal casing of cans: its economies and problems

Studies conducted by the U. S. Army Quartermaster Food & Container Institute show that staggered-row case packing of cans reduces container cube by 4.6% and saves up to 4,000 sq. ft. of boxboard per carload of product. These are attractive economies—and at least three major U. S. packagers, including General Foods, are considering adoption of the diagonal casing method. Nor is the technique limited to cans; any approximately cylindrical package can be accommodated. However, diagonal casing has its problems. Cans cannot be packed in lots of one or two dozen, which represent the basis of traditional pricing structures. And adoption of the technique will require conversion of existing case-loading machinery to produce diagonal patterns at high speeds. A report by the Institute's Joseph P. Akrep.

Get the details in "Diagonal Casing: Why Not?" p. 95

New high speeds for products in plastic tubes

Packagers who have shied away from plastic tubes because of a fear of production lags should have a particular interest in the fact that Procter & Gamble's Prell Concentrate shampoo in a clear, coated polyethylene tube is now coming off a 22-station rotary machine at the impressive speed of up to 120 filled and sealed packages per minute. P & G originally decided to use transparent, coated plastic tubes because of their protective and merchandising advantages. But the problem was to find equipment that would operate at the required speeds for its top-selling shampoo. The machine that has made it possible for this company to move quickly into national distribution with a radically new package

is the latest in a rapid series of advances that are putting plastic tubes on a competitive footing with metal as a smooth-running, high-speed, mass-market package.

Read about it in: "Plastic Tubes at 120 a Minute," p. 82

Debut of a glueable polyethylene coating for board or paper

A folding carton of polyethylene-coated board now being used by Norwich Pharmacal is the first ever to run successfully on a boxmaker's standard glue-sealing machinery. The secret is in a special treatment of the coating that now permits high-speed gluing of polyethylene surfaces with common starch-type adhesives, without the need for complicated heat sealing or other special means of adhering these impermeable surfaces. The treatment—equally applicable to polyethylene coatings on paper—appears to open up tremendous and immediate opportunities for this protective lining in all types of bags and boxes.

Read "The First Glueable Polyethylene Coating," p. 92

Machine teamwork solves a tablet-packaging problem

An ingenious combination of machines—a tablet counter electrically linked with a pouch forming-filling-sealing unit—is being used by Nutrilite Products to solve a packaging problem posed by its vitamin-mineral food-supplement product. The company markets its product in polyethylene bags enclosed in a two-compartment, molded polystyrene box. One compartment holds 93 capsules, the other 186 tablets. Nutrilite's problem: To match rising sales, it needed high-speed, automatic bagging equipment, yet also faced the necessity of maintaining an exact count on its premium product. The solution, as devised by company engineers, was to design an electrical interlock between the two standard machines so that the counter is controlled by the pouch former in precise timing, turning out 30,000 pouches a day, or 15,000 completed packages.

See "Machine Team," p. 98

An evolving code for uniform cautionary labeling

Led by the American Medical Assn., more than 40 organizations are supporting a current move for stringent and uniform labeling of hazardous substances. Concurrent with Congressional debate on the subject, the association's Committee on Toxicology has drafted model legislation designed to set Federal and state standards for the labeling of such products as paint; laundry and dry-cleaning chemicals; cleaning, polishing and deodorizing products; auto supplies, and toys containing chemicals. Behind this drive for uniform labeling, says the American Medical Assn., is the fact that existing legislation is generally inadequate. In this article, Esso's John B. Tuttle spells out in detail packagers' requirements and methods for labeling.

See "Rules of Cautionary Labeling," p. 106

'Supermarket design' for ethical dental products

The traditional design criterion among packagers of ethical products used by dentists or doctors for office use and treatment of patients seems to be this: Since their customers choose such products on the basis of hard-headed logic, the ideal package is one that provides the most information, regardless of any aesthetic factor. But one dental-supply manufacturer—Peter, Strong & Co.—believes dentists are as receptive to the appeals of modern package design as is the housewife shopping in a supermarket. That's why, in a complete package redesign for its Laclede line (including the adoption of whiter board for cartons) the company is seeking to give its products an edge over competitors in visual and display appeal. To learn how this sales-stimulating new design was achieved without sacrificing the clean, professional look,

Turn to "Ethical Aesthetics," p. 80

Package selection to extend shelf life of moisture-sensitive products

To packagers of moisture-sensitive products, the most critical requirement in the selection of packaging materials obviously is that of achieving maximum protection to lengthen effective shelf life. The product's moisture sensitivity, the ambient humidity and the rate of product turnover all play a part in determining such package selection. In this report—which makes use of sorption isotherms and of water-vapor-transmission data on several types of packages—manufacturers of moisture-sensitive products can find valuable guidance. A technical report by R. Heiss.

Read "Shelf-Life Determinations," p. 119

PHOTO: SHELLMAR-BETNER



Exemplifying the trend in new polyethylenes is this lightweight, low-cost, high-density film with superior clarity and gloss and greatly increased stiffness for easy machinability. Because of its strong linearity, this film tears open quickly and simply from a notch, along a line printed in the machine direction. No added tear tape is needed.

If there ever was any doubt of the willingness of suppliers to move quickly to meet a pressing need in the packaging field, it should now be satisfied by the progress made during the past six months in polyethylene film itself, in technical solution of its problems and in packaging machines suited for applying the material.

Just six months ago, MODERN PACKAGING concluded a special series of three articles¹ posing the question, "What About Polyethylene?" In the course of these articles—devoted to the economic, material and machinery aspects of polyethylene film—it was shown that while the film had suddenly become the least expensive transparent wrapping material, there were problems remaining, including

¹See "What About Polyethylene?" MODERN PACKAGING, Dec., 1957, p. 98; Jan., 1958, p. 130, and Feb., 1958, p. 116.

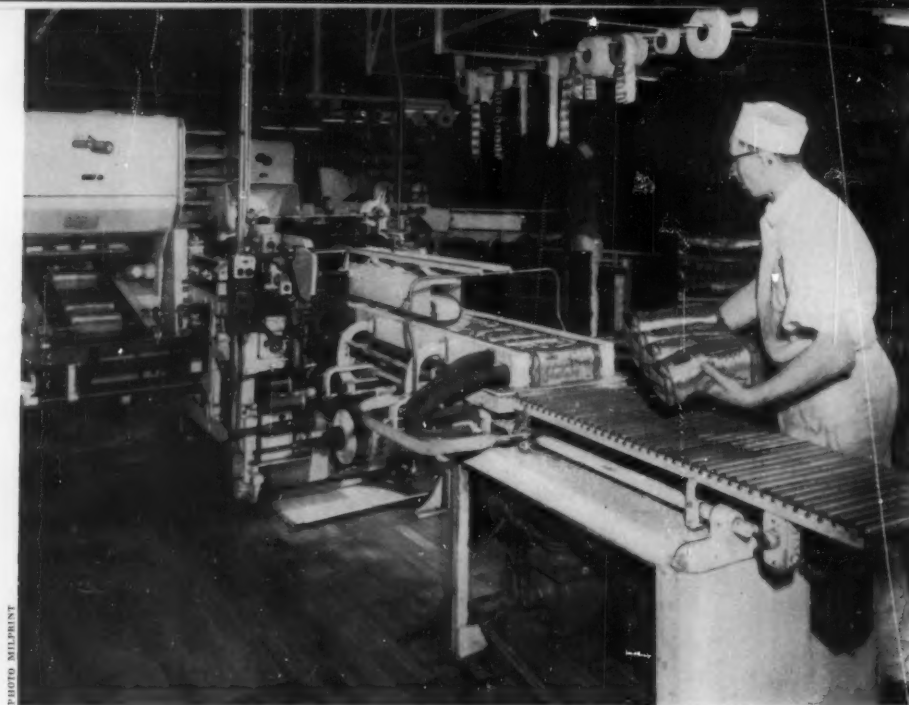
Polyethylene progress

In response to packers' call for lowest-cost overwrap film, significant advances have been made, in just six months, through improved resins, films and wrapping machines. Here's an interim report.

a definite lag in machinery capable of handling and sealing polyethylene film.

Not all of the problems have been solved; not all of the work and development involved in the complex translation of knowledge into tangible material and efficient overwrapping equipment have been encompassed in this short time. But there is no doubt that the intense interest expressed by packagers in polyethylene film—demonstrated by the crowds that gathered around new polyethylene materials and wrapping machinery at the two recent packaging shows—has caused both film and machinery suppliers to redouble their efforts, with encouraging signs of success.

This general excitement has even penetrated Harvard University's Graduate School of Business Administration. In a scholarly and comprehensive



An ingenious answer to the twin problem of sealing and opening polyethylene wrappers is the new combination of the film and waxed paper seen here being applied to white bread at Chas. Frehofer Baking Co. Waxed-paper end panels attached to the roll-stock film, are easily sealed with a machine attachment. Printed film in middle gives visibility, strength and the desirable "soft" feel.

report² on the problems and opportunities of linear polyethylene and polypropylene, prepared by nine of the university's graduate students in industrial management for Prof. Georges F. Doriot, this revealing statement stands out:

"The development of linear polyethylene and polypropylene, as potential giants in sales and capacity and as harbingers of an ever-broadening family of ordered polymers, is one of the most significant accomplishments in the past decade in the field of plastics technology."

In the last six months no less than four new low-, intermediate- or high-density films have been announced, with improved properties ranging from greater clarity to more stiffness and easier sealing. Some of the new films are already in commercial production; the remainder of them will be available in only a matter of months.

Most significant: Such has been the progress in production techniques for high- and intermediate-density films that they may come close to—or even beat—standard polyethylene film on price. And with these new grades, suppliers and converters are finding new ways around the technical problems that have made this heretofore limp, thermoplastic film difficult to feed, difficult to seal and difficult to tear once sealed.

Also, from the confusing array of new and old films and sometimes contradictory technical facts

there is at last a pattern beginning to emerge as to the future role in packaging to be played by each of the different forms of polyolefin³ materials.

It seems certain, for example, that high-density films and polypropylene will not replace standard low-density materials in the foreseeable future. Despite a certain overlap in properties and continuous improvement in both types, low-density films will have a steady and assured place in bag and overwrap applications requiring a high-impact, load-bearing packaging material. To some extent, polypropylene may also fit into this area.

But the sparkling and more glamorous high-density polyethylenes and polypropylene, relatively weak in impact strength, will undoubtedly reach their peak potential for film packaging in applications where the factors of sparkling clarity, high barrier properties and easy-opening convenience are primary considerations.

Further progress in setting the polyethylene house in order is seen in a new set of polyethylene film standards which has finally been agreed upon by a committee of The Society of the Plastics Industry and is now before the National Bureau of Standards for approval.⁴

The lights have also been burning late in the engineering departments of several machinery com-

³"Polyolefin" is a chemical classification including both polyethylene and the related plastic, polypropylene.

⁴See "Standards for Polyethylene," MODERN PACKAGING, March, 1957, p. 230.

²"Linear Polyethylene and Polypropylene: Problems and Opportunities."

panies. Three new overwrapping machines designed for polyethylene film have now joined the two limited machines that were available at the beginning of the year. Several more machines are still under wraps and probably will be unveiled before the end of the year.

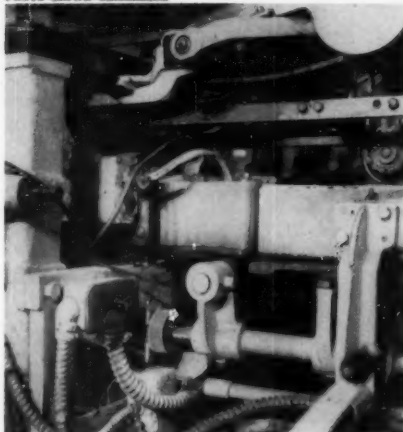
While the new machines have not as yet lifted polyethylene into true high-speed wrapping, they are definitely faster than earlier models. And while mechanical actions are, for the most part, still only modifications of paper- and cellophane-wrapping techniques, there has been notable improvement in film-feed mechanisms, in overcoming the problem of sticky heat sealing, and in the fixed-plate, moving-belt principle of sealing multiple folds of film, originally developed by the Bakelite Co.⁵

Moving into big time

A significant result of all this progress is the sudden emergence of polyethylene as a serious candidate for the huge bread-wrap business—a field in which it competes not so much with cellophane as with the even-lower-cost waxed papers.

The first move in this direction came with the announcement in April by Milprint, Inc., of a combination polyethylene-paper wrap specifically aimed at the big sliced-white-bread market.⁶ This material consists of a broad center panel of low-density, 1.5-mil, printed polyethylene film presealed to two end strips of polyethylene-fortified waxed paper. It neatly by-passes the end-seal problem that would

PHOTO CROWN ZELLEGRADE



Readily installed attachment for standard bread-wrapping machine, shown in this close-up view, enables unit to seal a full polyethylene wrap around product. Light tack seals are held in place by coated-paper end labels and insert band.

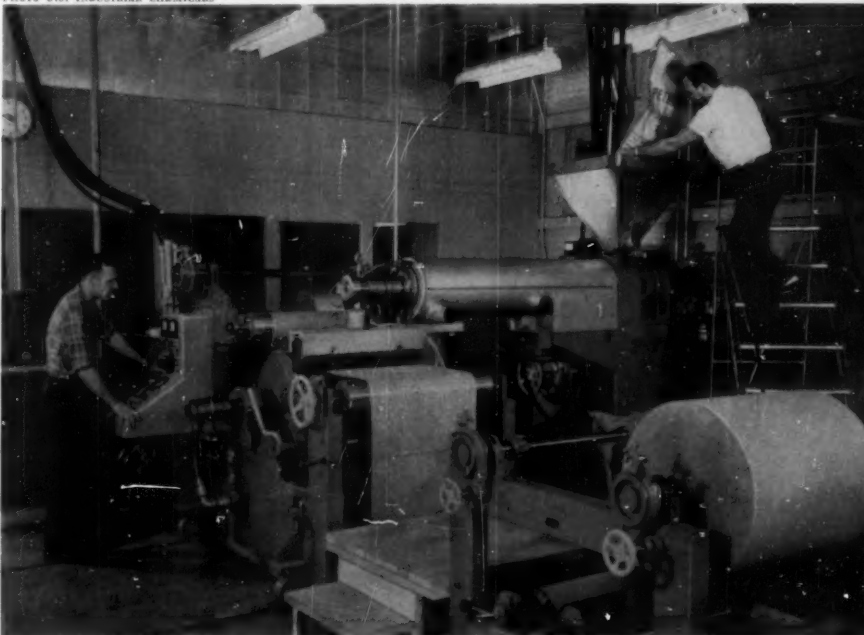
be caused by multiple folds of polyethylene and leaves the body of the loaf clad in clear, strong polyethylene film with the "soft" feel that bread bakers have found so attractive to consumers. With a machine attachment, developed by Milprint, that costs less than \$2,000 and fits any standard end-feed bread wrapper, the baker can switch to polyethylene-wrapped loaves without difficulty, at a wrapping speed of 60 loaves per minute.

While obviously a compromise rather than a basic solution of polyethylene's wrap-seal problems, this development has the great virtue of immediacy, making both bread bakers and bread buyers immediately polyethylene conscious and building even

⁵See "What about Polyethylene?" Part III, MODERN PACKAGING, Feb., 1958, p. 116.

⁶See "Bread in Polyethylene Wrappers," MODERN PACKAGING, April, 1958, p. 198.

PHOTO U.S. INDUSTRIAL CHEMICALS



Casting technique for polyethylene of standard low density, which may raise this film in gloss and transparency to that now obtained only with higher densities, is performed on this commercial-scale paper coater by extruding resin onto a highly polished drum.

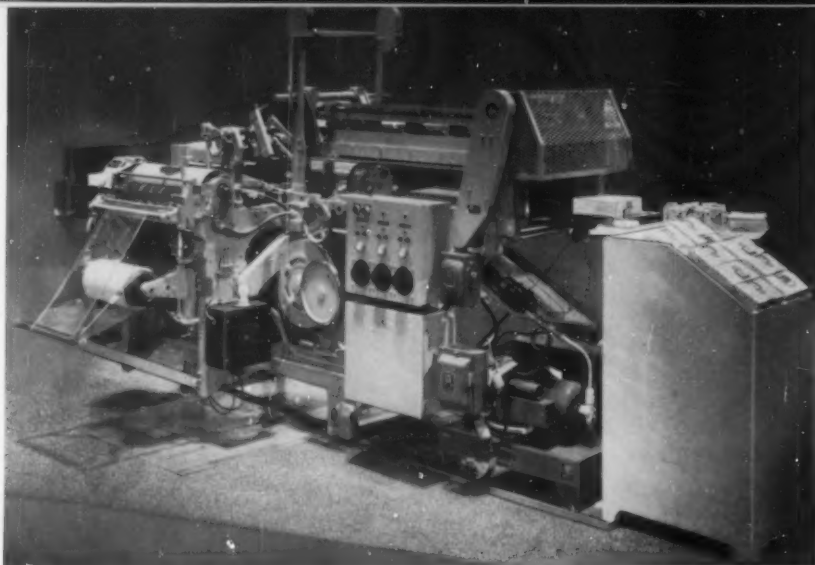


PHOTO BATTLE CREEK PACKAGING MACHINES

Higher speed, greater versatility are obtained with new basic overwrap machines. This 75-a-min. unit handles all types of polyethylene film and most other flexible packaging materials as well. It uses chain-mounted pads that interpose between package and sealing elements and mechanical refrigeration to chill seals.

High utility is promised by this new overwrapper, which has a short film feed and slit-plows that form wrap into two-point folds. Chain-driven bars push packages through belt-covered sealing section. Three pairs of sealing plates, graduated in temperature, give more accurate seal.

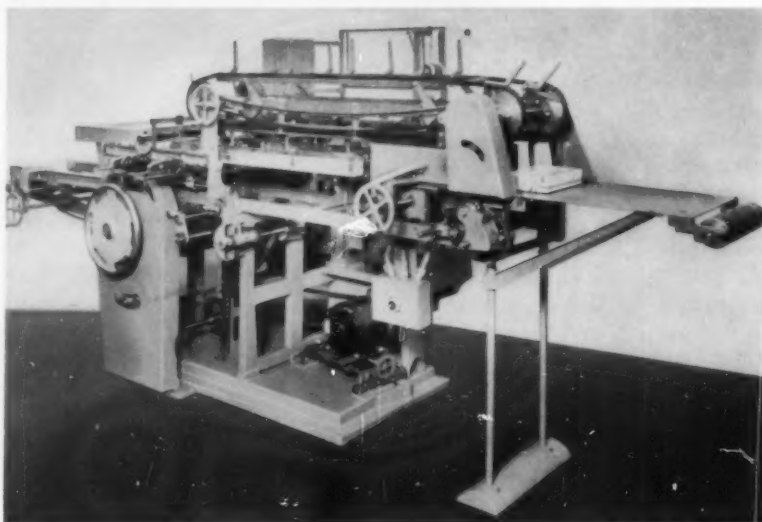


PHOTO PACKAGE MACHINERY

stronger the demand for ultimate solution of the film's current problems.

Already, no less than 10 bakers are using the combination material for at least part of their white-bread production.

Hot on the heels of this development came a more direct attack, through the joint efforts of Spencer Chemical Co. on resin and Crown Zellerbach Corp. on film. The result is a straight polyethylene-film bread wrap that appears to operate successfully on a standard bread wrapper with a special attachment.⁷ Coated-paper end labels help to secure the overlapped film end seal and an insert band of similar paper covers the longitudinal bottom seal. Otherwise, the secret is in the film—made from an intermediate-density resin and by a special extrusion process which together give

practical stiffness and sparkling clarity to the film—and in the machine attachment, which again was developed by the film supplier. The attachment is available for about \$1,500 and fits a standard American Machine & Foundry bread wrapper.

While this material is aimed initially and primarily at the specialty bread market, its improved properties undoubtedly will lead to its use for many other products in both the food and non-food packaging industries. At present, this polyethylene film is made only in 1-mil thickness.

Important new films

In May, the National Packaging Exposition in New York was abuzz with news of further developments in films.

One is a new kind of low-cost polyethylene film called Conolex, developed by Continental Can Co.'s Shellmar-Betner Div. from Phillips Chemical Co.'s

⁷See "Broad Wrapper: New Polyethylene Triumph," MODERN PACKAGING, May, 1958, p. 148.

high-density linear resin. This material, which joins another high-density film announced in January by W. R. Grace & Co., is in full commercial production in $\frac{3}{4}$ -mil thickness. It will be joined shortly by a similar film $\frac{1}{2}$ mil in thickness.

This type of high-density film has a host of interesting properties, including greatly increased stiffness, high surface gloss and excellent clarity. The fact that it can withstand temperatures as high as 250 deg. F. and as low as minus 100 deg. F. suggests many applications in the fields of heat-processed and frozen foods and sterilized pharmaceuticals and supplies. Its resistance to transmission of moisture, oxygen, greases and oils is higher than that of conventional polyethylene.

Most significant of all for mass marketing is the fact that linear films of the Continental Can Co. type seem to offer a built-in solution of the tear-open problem. The strong linearity of molecular arrangement in this high-density film makes it comparatively easy to tear the film in a straight line along a printed line starting from a notch, perforation or seal.⁸ This advantage is obtained at considerable loss in over-all impact strength. The film is not recommended for heavy-duty bags such as are used for oranges, potatoes, etc.; these jobs will continue to be handled by conventional low-density, high-impact-strength films. But the new film has adequate tensile and elongation strength and, with its fine appearance and handling qualities plus low cost, emerges as a logical candidate for the big field of machine overwrapping of cartons and trays—the field in which polyethylene has been most conspicuously lacking.

The developers of the new tearable film are aiming, for example, at the vast cigarette-package field—where economy of material and an easily notched or printed tear opener could make polyethylene a serious packaging-material competitor—and at the bakery field—where light weight of contents, ease of opening, and grease and moisture protection make it a good bet for both bags and tray overwraps.

The clincher will be low cost. A firm price has now been established, putting Continental's film 0.8 cent below conventional $1\frac{1}{2}$ -mil polyethylene in price per 1,000 sq. in. The new, unprinted $\frac{3}{4}$ -mil film is quoted by Continental at 1.39 cents per 1,000 sq. in.; upcharge for printing is the same as that for regular polyethylene. This price, if it should be sustained, is also 1.3 cents per 1,000 sq. in. below that of standard MST cellophane—and also about 0.2 cent below the cost of bread-wrap-grade waxed paper.

The low price of this polyethylene film stems from increased stiffness and higher barrier properties,



PHOTO U.S. INDUSTRIAL CHEMICALS

So light that it floats lazily in air, this new 0.2-mil polyethylene film is at present only a laboratory curiosity—but it demonstrates graphically the flexibility film makers have acquired by using new resins and manufacturing techniques.

which make practical the use of very light gauges and hence a yield per pound about twice as high as conventional polyethylene.

Work is now under way to determine what, if any, changes are necessary in present polyethylene overwrapping equipment to handle this new, thin film. The problem does not appear to be great.

A second new direction in polyethylene involves a different method of producing films. It has long been known that machinery of the type used for coating polyethylene on paper could be adapted to cast an unsupported film, in contrast to the extrusion method which has ruled up to now. In view of the new applications for which polyethylene is now heading and the wide variation of resin densities now available to work with, the possibilities are most interesting.

Brought into the open at the AMA show by U. S. Industrial Chemicals Co., a resin producer, was a low-density cast film reported to combine the toughness of conventional polyethylene with the sparkle and clarity of cellophane. Clarity is a characteristic result of the casting method. In this case, a resin of 0.927 density is extruded at high temperature and speed onto a chilled, chromium-plated, mirror-finish roll. Rapid cooling minimizes the formation of crystals and resultant haze.

Since this process reduces crystallinity and produces a more amorphous film, it would presumably reduce the strong linearity which is cited by some as a disadvantage of high-density films.

At this moment, extensive tests are being conducted by numerous film [Continued on page 171]

⁸See MODERN PACKAGING, JUNE, 1958, p. 38.

Ethical aesthetics

*Laclede's line of dental-treatment items
proves that dramatic, sales-stimulating design can be achieved
without loss of the clean, professional look*

If the package-design concepts of brand identity and aesthetic appeal can do such an outstanding job of winning consumer loyalty and repeat sales for everyday products, why can't they be applied with equal effect to the packaging of the specialized professional items that dentists use to treat patients?

To Peter, Strong & Co., Inc., New York dental-supply manufacturer, the answer is this simple: they can. In a full-scale package-redesign program for its recently acquired Laclede line of dentists' products—including the adoption of finer, whiter board for cartons—the company is seeking to establish strong family identity and give the products an edge over its competition in display appeal. Although it is still too early to tabulate sales results, the visual appeal of the new Laclede packages has been convincingly proved. They won an award for distinctive merit in this year's annual National Exhibition of Advertising and Editorial Art and Design, sponsored by the Art Directors Club of New York.

The Peter, Strong redesign story actually began in 1956, when it acquired Laclede Laboratories—formerly a unit of Lambert Pharmacal Co. Together with its designer, the company began to thresh out methods for integrating its new division's products into its established line.

As a preliminary step, it was agreed that the professional dental-products field was one that had given little thought to the psychological effects of packaging for family identity and display appeal. The traditional criterion seemed to be that since dentists choose professional products on the basis of hard-headed logic, the ideal package is the one that provides the greatest amount of information, regardless of any other factor.

However, the company believed that dentists are as receptive to the appeals of modern package design as is the housewife shopping in a supermarket. So it decided to scrap the traditional concept and adopt

a consumer-product look for the Laclede line—with the reservation that the packaging must maintain a professional aura.

The company selected as its basic package design a white "plus sign" against a solid-color square panel, with a liberal expanse of white background. To accentuate the clean, uncluttered appearance of the new packaging, product information has been removed from front labels. Simplified instructions are concentrated on easy-to-read back panels and expanded in package inserts. The combination of these design elements, according to the company, not only makes for more effective mass display, but also connotes health and sanitation, which are necessary appeals in marketing professional dental products.

Parenthetically, the plus sign and the square background panel (divided into four equal parts by the symbol) are key elements in the company's marketing strategy. In regular promotions to dentists, the products are merchandised as the "four-square line with built-in plus benefits."

It is significant that this company's redesign plan stipulated the use of fine-surfaced, white folding cartonboard. The new cartons for products in collapsible metal tubes and glass jars are made of 0.020 white, clay-coated board with a manila backing. The whiteness and improved printability of this board's surface are major factors in achieving the design effects of high quality, sanitation and eye appeal.

Color keying was another important step in the Laclede package-redesign program. The three brands involved are: Profie, a product for enzyme-action prophylaxis (tooth cleansing by the dentist), available in liquid, tablet and paste form in jars and collapsible metal tubes; Topi-Fluor bite wax, caries-control cream and impression trays in tubes and set-up boxes, and Laclede professional deodorants, including oral deodorant in glass jars and room deodorizer in aerosol spray cans. On all packages,



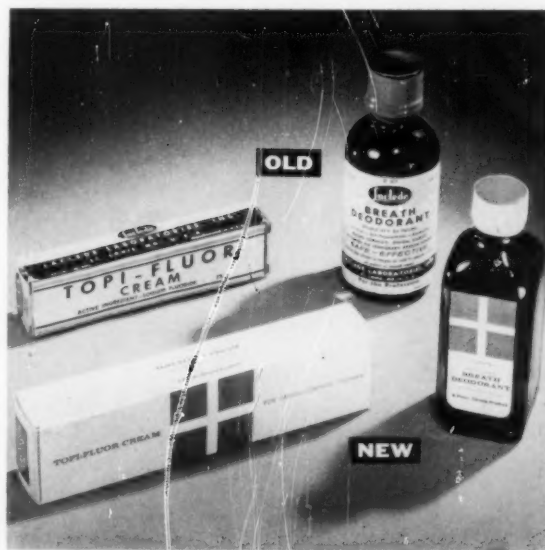
Combination of "plus-sign" trademark and liberal use of white space on new family-identified Laclede packages is designed to suggest the sanitary, healthful character of these professional dental products while affording them stand-out display visibility. Colored square surrounding the plus signs are red, green or blue to identify the three product lines.

including cartons, the color of the "four-square" background panel is: blue for the Profie line, red for the Topi-Fluor and green for oral deodorants and room deodorizers.

Use of these solid colors, the company says, accentuates the whiteness of the package background and also makes for dramatic impact when the products are stacked side by side on the shelves of dental-supply depots or reproduced in promotion material. This visual appeal in mass display is considered by Peter, Strong to be an important sales-stimulating factor, because dentists frequently visit the supply depots when looking for new products.

One final problem in this redesign program was how to integrate the Laclede line fully into the Peter, Strong family, yet retain the considerable value of the former's name. This was achieved by scrapping the bold Laclede logo and simply including the division name, in subdued type face, on all packages above this legend: "A Peter, Strong product."

SUPPLIES AND SERVICES: Design by Rudolph de Harak, 24 W. 56 St., New York 19. Cartons by E. J. Trum, Inc., 70-84 Richards St., Brooklyn 31, using "Ridgelo" white custom-coated board by Lowe Paper Co., Ridgefield, N.J. Bottles and closures by Armstrong Cork Co., Lancaster, Pa. Collapsible metal tubes by Atlantic Mfg. Co., 557 S. Belmont Ave., Newark. Paper labels by Ajay Printing Service, Inc., 148 W. 23 St., New York 11.



Comparison of old and new packages illustrates aims of the redesign. Finer, whiter board adds impact to new folding carton for Topi-Fluor cream in metal tube. Carton also has a less-cluttered look, since product data are now on package insert. On new square bottle for breath deodorant, informative copy is on separate back label.

Plastic tubes



Transparent tube—unbreakable, non-collapsible and with clear indication of content level—was found to have great appeal to consumers. Emerald green of contents is basis of color scheme. Tube is interior coated with saran resin to protect contents and exterior is coated with varnish.

Behind the story of Procter & Gamble's adoption of a clear polyethylene tube for its Prell Concentrate shampoo is a remarkable advance in machinery. From this example alone, it can be concluded that plastic tubes are now ready to take their place alongside collapsible metal tubes as a smooth-running, high-speed, mass-market package.

The machine that has made it possible for P & G to move quickly into national distribution with a radically new package for one of America's top-selling shampoo brands is the latest of a rapid series of step-ups in equipment which has been specially designed to fill and seal polyethylene tubes. The machinery manufacturer says that this new 22-station, rotary machine can run day and night at a continuous speed of 120 a minute, turning out—if needed—172,800 packages every 24 hours.

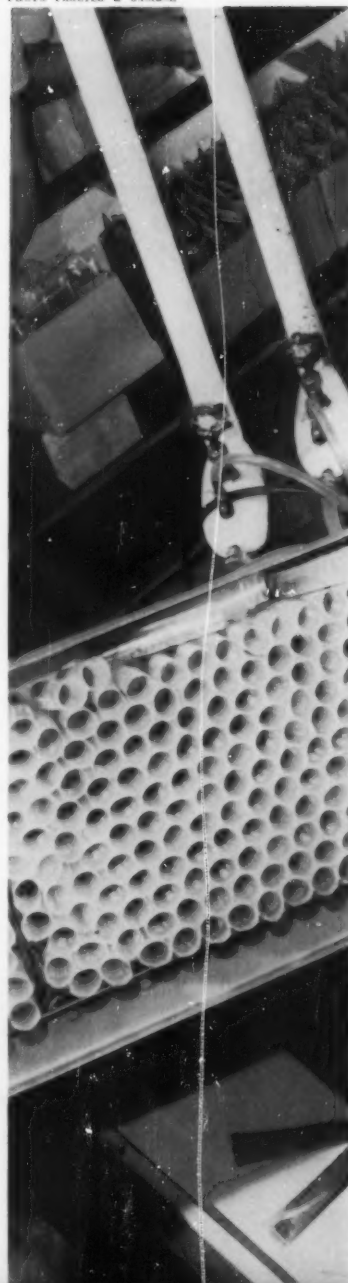
With this and other machines of high speed now available, P & G's experience seems to show that packagers who have held back from plastic tubes because of a fear of production lags need hold back no longer.

The new Prell package itself is noteworthy for several new features, none of which did anything to lessen the production problem:

1. It is one of the first big-volume tubes ever to employ the use of a transparent formulation of polyethylene.
2. To block the permeation of ingredients in the highly concentrated liquid

Rotary machine at P & G, rated at 120 tubes a minute, runs with two operators, who pick two open-end tubes at a time from rack and place them in twin cavities, lining up printed registration marks with index lines on the closing jaw. With intermittent cycling counter-clockwise, the tubes are vacuum cleaned and filled, then ends are pressed between sealing bars with a sealing end exposed. Tubes then pass through radiant heating bars (section under screen opposite operators), are crimped shut and code marked, and ejected to conveyor belt at left foreground.

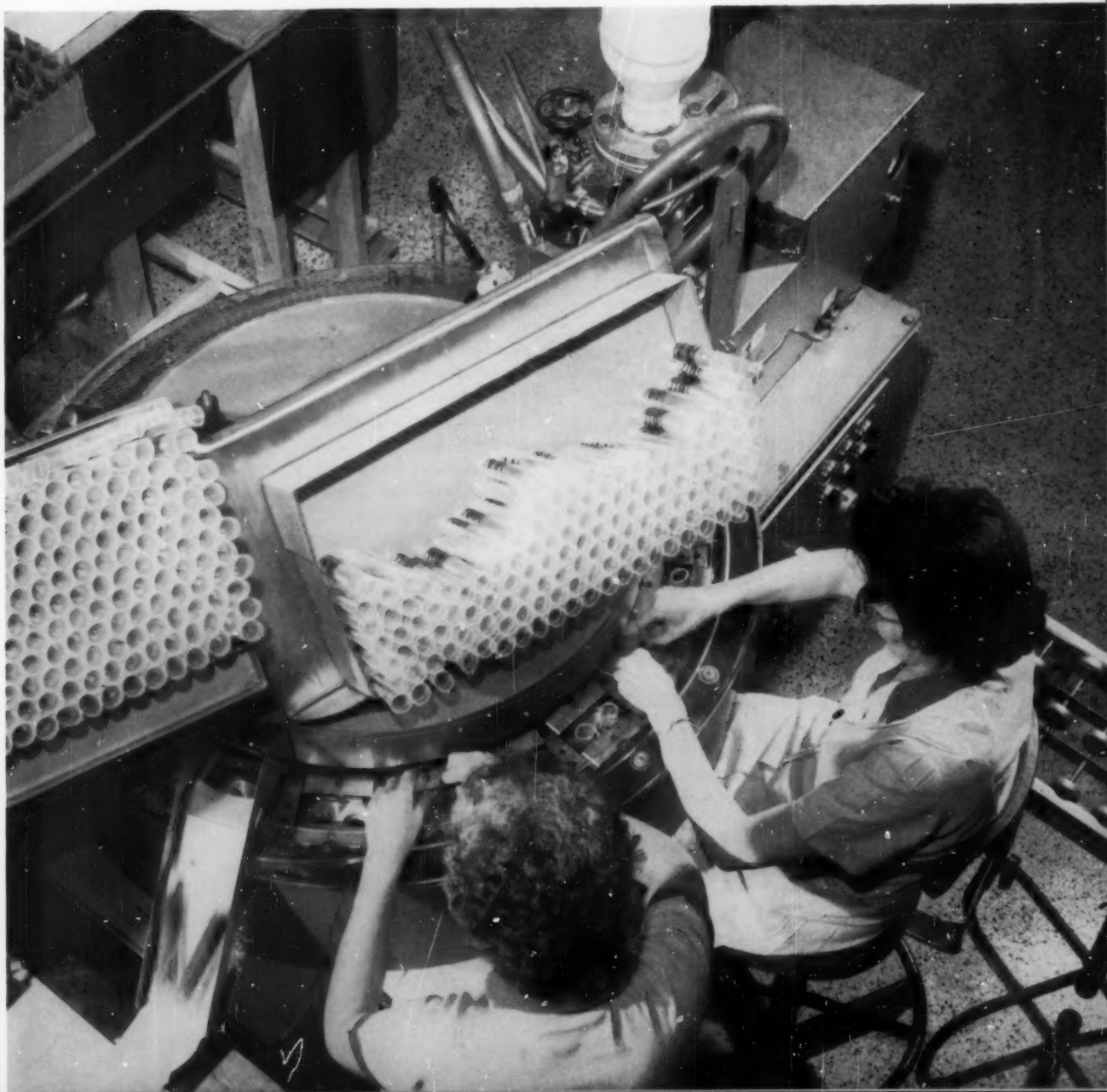
PHOTO PROCTER & GAMBLE



at 120 a minute

*Convincing evidence of polyethylene tube's new place in high-production schedules
is a machine that fills and seals*

Procter & Gamble's Prell shampoo with continuous rotary motion





Four sizes are handled on the same P & G machine and each tube is packaged individually in a unique gold-and-silver-colored foil carton which dramatically sets off the green-filled tube with reflected light.

shampoo, it is interior coated with a saran resin and is exterior coated with a high-gloss varnish.

3. It uses a new, linerless, valve-type cap.

4. It comes in four sizes, all of which can be handled on the same type of filling-sealing machine.

5. It is marketed in a unique open-face carton, requiring precise positioning of the tube's printed face during the bottom-sealing operation.

The package offers many merchandising advantages, but P & G realized that these would be of little value unless the tubes could be filled and sealed at the high rates of speed necessary to support national advertising and national distribution.

Early this year the company found that the new, rotary, 22-station filler and sealer would meet its production requirements. Although P & G has not stated actual output figures on the machine it has installed, the equipment manufacturer claims speeds of 120 a minute are achieved on twin-fill cavities such as Procter & Gamble uses.

Versatility of the machine is underlined by its ready interchangeability between sizes. Change-over from one size to another, according to the machine manufacturer, can be made in 3 to 3½ hours. For tubes larger than 1⅛ in. in diameter, the machine handles only one size per head.

Trays of capped and empty tubes are fed on an inclined roller conveyor to two operators, a single tray holding 250 empties being positioned at shoulder level in front of the operators. Each operator picks two open-bottom tubes at a time and places them upside down in a double-cavity head as

stations rotate intermittently in front of them. While seating the tubes, they turn them so that diamond-shaped registration marks printed opposite each other on the tubes line up with two loading index marks on the station's closing jaws. In this way tubes are positioned so that they will be sealed with the printing faced properly in the open-face carton.

The tubes pass under a vacuum cleaner, then under a no-tube-no-fill checking mechanism. Immediately following is a double-head filler that fills both tubes in a station simultaneously. Closing jaws then move against the tubes to hold them in place while leaving a sealing edge exposed.

The tubes travel under radiant heating bars to soften the exposed polyethylene. Water-cooled, reciprocating crimping jaws then clamp against the polyethylene at this point in the intermittent cycle to effect a seal and emboss a code date. The closing jaws pass through a refrigerant air tunnel to cool them before they press against tubes in the next cycle around the machine. This prevents tube damage resulting from overheating these jaws and enables the machine to run around the clock if necessary. The cooling chamber also sets the polyethylene weld on the bottom of the tube.

As the tubes complete their circle around the rotary machine, an ejection rod kicks the tubes out of the cavities and they drop two at a time down a chute onto a conveyor belt to the cartoning station.

P & G decided to use the clear polyethylene tube instead of metal because of the emerald-green product's visual impact which helped rocket sales of

Liquid Prell in special-mold glass bottles (which are being continued). Consumer testing convinced Procter & Gamble that the plastic tube was preferred for three main reasons:

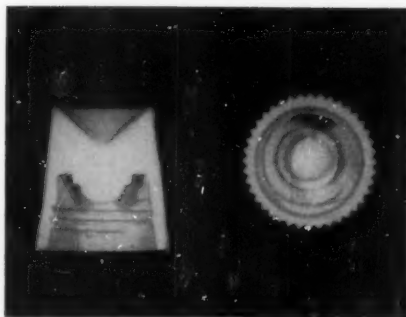
1. Its transparency shows the user how much shampoo is left.
2. The tube won't crack or leak and doesn't have to be rolled up during use like metal tubes.
3. The plastic tube won't break. It's safe to use in the shower, for traveling and for use by children.

In addition to the above advantages, Procter & Gamble's new Prell tubes can be seen and felt in the open-face carton and the product will not drip if the cap is left off of the tube.

At present, tubes are being tested and cartoned by hand. Although P & G has not disclosed its own plans, it is known that automatic equipment is being developed which can squeeze each tube to meet the severe strength test, then carton them automatically.

The new foil-surfaced carton for Prell Concentrate is a unique construction in which die cuts and scores permit two sides of the carton to be folded inward, forming a cradle and foil backing piece for the tube at the back, while leaving an open display area on top and front sides. Ends are tucked in the conventional manner. The large die-cut opening of the carton displays most of the tube and its emerald-green product. The carton face is primarily gold in color, except for a prominent white panel at the base of the front, where a new dandruff-fighter ingredient, D-44, is featured in red and golden lettering. End panels employ gold, silver, white, red, green and black colors.

The internal saran coating of the tube acts to retain both product aroma and oils. Closure is a new linerless urea cap that has an inner valve, hemispherical in shape, that seats itself into the tube's neck opening. The pliable polyethylene per-



Special tube cap that needs no liner is shown here in cross-section and inside end view. Projecting nub seats into the orifice of the tube to provide a positive and leakproof seal.

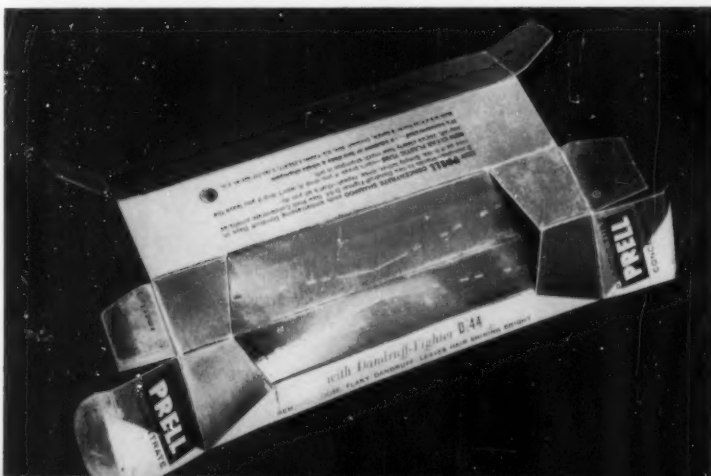
mits this construction and prevents product leakage.

Three-color printing on the tube creates an optical illusion of white, dark green and light green when viewed against the product. Actually, the tube is printed in white, black and blue, but the translucence of the product and tube changes these when filled. An outer varnish is added to provide extra sheen for display impact.

Procter & Gamble has established rigid quality controls throughout the entire packaging operation. Incoming tubes are inspected to meet standards established for many different tube qualities. Filled tubes likewise are statistically analyzed as well as visually inspected on the line to meet P & G's packaging requirements.

SUPPLIES AND SERVICES: Plastic-tube filling and sealing machine by Saga Packaging Machinery Div., A & M Tool & Die Co., Inc., Mill St., Southbridge, Mass. "Bracon" clear polyethylene tubes by Bradley Container Corp., sub. American Can Co., Maynard, Mass. Caps by Wheeling Stamping Co., Wheeling, W. Va. Cartons by Richardson Taylor-Globe Corp., 4501 W. Mitchell Ave., Cincinnati 32. Designs by Donald Deskey Associates, 630 Fifth Ave., New York 20.

Carton flat shows how simple die cuts and scores permit two-side section to be folded inward to form a silver reflective cradle in which the transparent tube rests. At right is an end view of opened carton with the polyethylene tube in place.





Steel containers

The steel-container industry appears to thrive on competition. Wartime and postwar shortages of steel led many packagers to use alternate containers which they have retained because for many products these have proved adequate and less costly. Yet combined sales of new steel drums and pails in 1956 reached the highest level in history (more than 120 million units) and last year stood a good 10% above the postwar low of 1949.

This remarkable record could only have been established by making the most of those qualities of steel containers which competitors could not match. Strength and long life are obvious advantages of steel. Less apparent were the sales-appeal possibilities of these utilitarian containers, which serve as primary shippers for a large proportion of our bulk chemicals, oils, paints, foods and other industrial products. Here, the industry has made striking progress. With the application of multicolor lithography to steel, it has been able to turn out 55-gal. drums as

Colorful designs that turn drab exteriors into powerful promotion pieces are applied to steel drum plate in the flat by high-speed, continuous lithograph presses. Big sheets are printed and up-ended automatically, then baked.

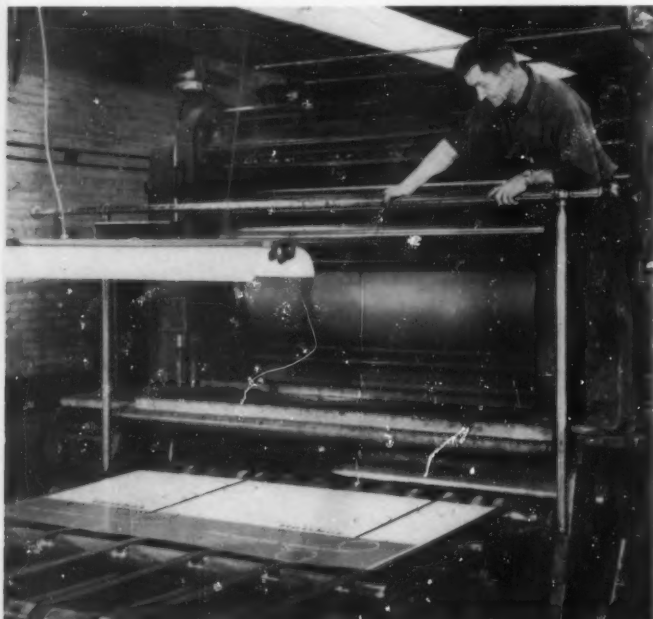


PHOTO INLAND STEEL CONTAINER CO.

beautiful as biscuit tins, making the bulk container a new source of pride and promotion for the packager.

The product-prestige possibilities in the spanking new, decorated steel container have provided the industry's best answer to the war-born practice of reconditioning and reselling used drums and pails (around which a completely separate supplying industry has sprung up). But in addition, the container makers have developed improved designs and manufacturing methods, making possible the use of lighter gauges of steel; they have advanced standardization for economy, and have brought out improved coatings, linings and special dispensing fittings for easier application and end use.

The industry

The manufacture of drums and pails is spread among about 40 companies having a total productive capacity of nearly 200 million containers per year. The drum and pail industry uses better than a million tons of sheet steel per year—second only to the automotive field. As a matter of fact, several of the important manufacturers of these containers are also primary steel producers.

More than 80 steel-container manufacturing plants are located in major northern and western industrial areas of the U. S. However, new plants are springing up in the South Atlantic states where the chemical industry is expanding. More than 90% of the manufacturers are members of the Steel Shipping Container Institute, which thus constitutes an official voice for the industry.

The industry manufactures two basic products—pails, which hold from 1 to 12 gal., and drums for larger volumes. While there is a host of sizes and types in each category, the most popular containers are the 24- and 26-gauge 5-gal. pails and the 18-gauge 55-gal. drum. Last year these pail sizes accounted for better than 46,000,000 out of a total of 73,678,000 pails shipped and the popular 55-gal. drum accounted for about 15,629,000 out of 34,748,000 drums of all types.

Both pails and drums come in open-head and tight-head or bung-type styles. The open-head drums,

This supplier industry continues to gain by stressing the strength and long life that steel can give, with new inducements of fine color decoration and ease-of-use fitments



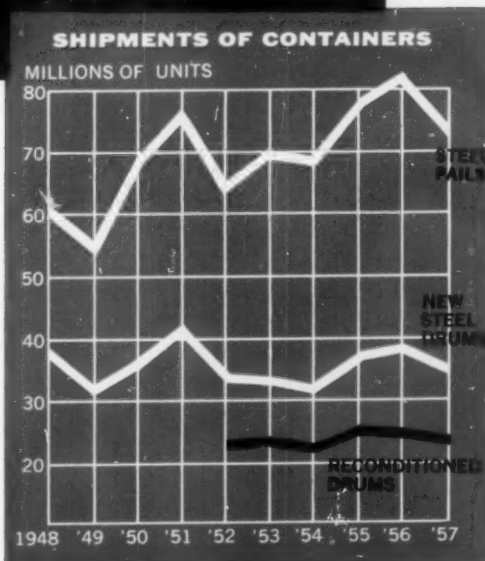
PHOTO SHEEM MFG. CO.

which have bolted or clamp-on covers, are generally employed for free-flowing or viscous solids. Bung-type barrels with top and side plugs carry liquids. A special tight-head pail with a dome top is used principally for fuels.

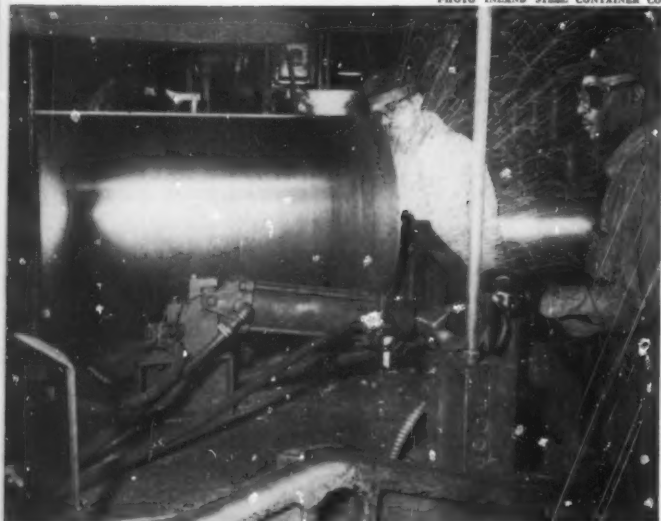
In general, heavy drums are made of steel sheet ranging from 14 to 20 gauge, with pails utilizing thinner sheet from 24 to 29 gauge.* Stainless steel is used for some special drums that contain foods or corrosive chemicals. A considerable quantity of aluminum is used for beer kegs and barrels.

Starting with cold-rolled steel sheets, modern drum manufacture employs automatic and semi-automatic equipment to form sheets into drum or pail bodies and to double seam or weld the side seams. After the weld is ground and beaten flat, the top and bottom edges of the cylinder are flanged

* In the steel-container industry, higher gauge numbers denote thinner sections. Drums of 14 to 20 gauge range from 0.0747 in. down to 0.0359, while pails of 24 to 29 gauge are from 0.0239 to 0.0135 in.



Production of new steel drums and pails has had more ups than downs in recent years, despite competition from reconditioners and from other container materials. Above, in a typical modern plant, lithographed drums emerge from conveyorized oven in which sprayed lining is baked in.



Sparks fly as heavy-duty drum destined for use with regulatory products is butt welded for an impervious side seam. Perfect cylinder is formed by passing body sheets through special roller.



Combination containers that offer product protection of polyethylene with strength and rigidity of steel are relatively new trend in both pails and drums. This lightweight, 13-gal., blown bottle fits into tailor-made steel jacket; neck protrudes through special, clinch-type cover.

and rolling hoops usually are pressed out of the body to add strength and protect the drum chimes. The bottom and head of the drum, formed in a separate operation, are double seamed in place (on tight-head drums) and may even be welded on special drums. Decoration can be done either on the flat sheets or "in the round." Special coatings are applied on the outside before the ends are attached

and on the inside—according to product requirements—after the drum is completed.

From hand-operated lines producing 25 to 50 barrels per hour 50 years ago, the industry today turns out 500 to 600 drums or 1,500 to 2,000 pails per hour in fully automatic plants.

Two industries—chemical and oil—use better than three-quarters of drum production and almost half of the pail output. In 1956 the chemical industry surpassed oil for the first time in the use of such containers and it now accounts for about 40.5% of the drums and 20.5% of the pails. Oil takes 37.9% and 20.9%, respectively. Paint fills 26% of the pails. Various other end uses—such as for foods, roofing materials, inks and adhesives, and for the requirements of the Armed Forces—take up the remainder of both pails and drums.

Competition for the steel-container industry comes today from three directions: from fibre drums, from multiwall shipping sacks and from the reconditioned product of its own manufacture. Both fibre drums (to be covered in a future article in this Supplier-Industry series) and multiwall bags (covered in July, 1957) have been greatly improved and greatly expanded in usefulness in the last 15 years.

The drum-reconditioning industry, which was almost non-existent before World War II, now has 250 independent and 150 "captive" plants. Reconditioners handle better than 24 million drums per year—removing dents, adding new linings and repainting them for resale at a cut price. To be practical for re-use, drums generally must be made of 18-gauge steel; such drums can have a service life of 10 trips under favorable conditions. A large proportion of the reconditioned drums today are used for the packaging of products of the oil industry.

Invisible changes

Outwardly, except for improved decoration, modern steel drums and pails appear little different from the first domestic, bilge-shaped barrels produced in 1902 by Standard Oil Co., the first straight-sided drums that followed in 1907, or the initial lug-type pails developed in 1914. This is because the general shape and construction of these carriers are rigidly specified by the Interstate Commerce Commission. Regulations for highly corrosive, poisonous or flammable products (termed "regulatory products") are determined by the Bureau of Explosives. Non-regulatory items are shipped in containers that conform either to the Consolidated and Uniform Freight Classifications or to the National Motor Freight Classifications specifications.

Despite these stringent specifications, however, there is a major trend under way toward lighter-gauge, single- or multiple-trip drums and pails. This

results from continuous research conducted by the Battelle Memorial Institute in cooperation with SSCI and various manufacturers.

The reason for this trend is strictly economic, for in spite of tremendous increases in productive capacity, the container manufacturers have not had difficulty keeping ahead of the rising cost of steel.

Some single-trip drums of 20-gauge steel are now in use for regulatory products. More are being used for non-regulatory items. No multi-trip drums are approved for this light gauge as yet, but development of stronger rolling hoops in drum walls may soon overcome this objection.

In pails the switch is more pronounced, since lighter containers are substantially less expensive. For example, a switch from 24-gauge pails to 26 gauge saves about 10 cents per container; a switch to 29 gauge saves another 3 cents. But regulations and strength requirements dictate caution.

Also hidden from general view are new surface treatments and container linings that broaden the application of pails and drums by enabling them to withstand better any adverse shipping and storage conditions and to hold highly corrosive products.

Much research goes into metal-surface preparations, degreasing and methods of applying and curing coatings and linings. Exterior phosphate coatings, while relatively new for drums and pails, have already swept the industry. They provide a tight zinc-iron-phosphate surface that inhibits the spread of rust from any point of damage under the drum finish and also gives an excellent bonding surface for additional paint and lacquer coatings.

Moreover, great progress has been made during the past 10 years in development of new phenolic

and epoxy linings, and latest research indicates that many other organic materials—including vinyls, polyamides, polysulfides, polyethylene and blends of these materials—can provide very effective drum and pail liners for many different products.

One of the newest of these materials is a low-cost, amide-type coating applied in molecular thicknesses which inhibits rust formation and promises wide applications for relatively non-corrosive products.

In addition to these coatings, which are applied by high-speed spray or roller equipment, separate liners are available. Most of these are polyethylene, in the form of bags or even semi-rigid bottles and "barrels," closely fitted inside lightweight steel pails and drums to give full shipping protection for highly corrosive solid and liquid chemicals and foods.

Trend to decoration

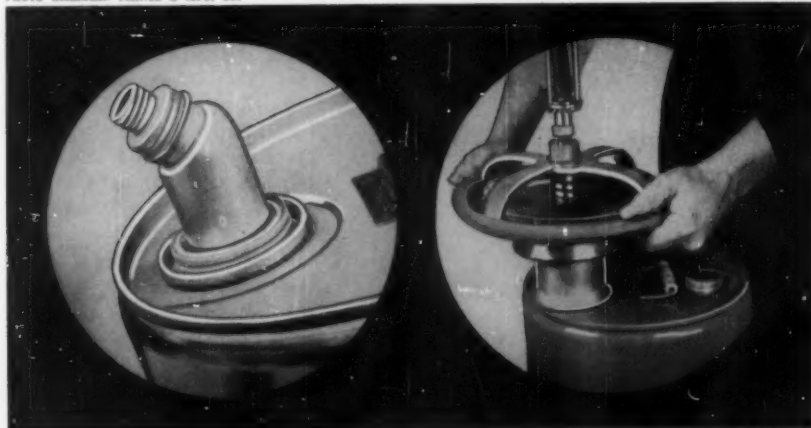
While use of decorated drums and pails seems to vary with economic conditions, the trend is unmistakable. This is particularly true with specialty products or very expensive items.

Techniques range from simple painting, stenciling and the use of labels and decals, to beautiful and complex silk screening and lithography. For some time most decorated pails have been lithographed, but lithographing large 55-gal. drums is relatively new and requires million-dollar presses.

Silk-screening costs far less, but it produces similarly rich designs. This method of decorating steel containers is generally used for simple patterns that do not require extremely close register.

Coincidental with the trend toward distinctive surface treatment has been an opposite movement toward standardization of [Continued on page 178]

PHOTO AMERICAN FLANGE & MFG. CO.



Packager-applied nozzles for pails and drums are new convenience aids that standardize manufacture and simplify use of container. Reversible spout assembly (left) comes with light metal seals and is applied to pail, after filling, with either hand or pneumatic (right) equipment.

Cost-cutting redesign upgrades the visual appeal



The spectre of added costs can be a very real deterrent to manufacturers considering redesign of their packages. So it is interesting that a recent redesign program by Taylor Instrument Companies, Rochester, not only is calculated to upgrade the visual appeal and family identity of its temperature and weather instruments—but also effects savings expected to liquidate change-over cost in five years.

Chief factor in cost reduction is the use of two colors (blue and yellow) in the new design, compared with three in the old. For greater impact, the Taylor logo appears in a blue circle against a yellow background on all packages.

To capitalize on the sales appeal of visibility, the company has adopted hang-up cards with protective, transparent thermoformed acetate blisters for thermometers sold in self-selection stores. (Formerly, all products were boxed.) A telescoping box with contoured thermoformed acetate insert for Taylor's "Suburban" thermometer is the same construction as its box which won first place for superiority of construction in this year's National Paper Box Mfrs. Assn. competition. (See MODERN PACKAGING, May, 1958, p. 176.)

DESIGN

Wrapless waxed cartons for Birds Eye foods



More evidence of the trend toward building better protective function in the carton itself is news that Birds Eye Div., General Foods Corp., is marketing its frozen dinners in colorful waxed cartons without overwraps. (See "Wrapless, Linerless Cartons," MODERN PACKAGING, Aug., 1957, p. 92.)

The cartons are made of 15-pt. solid bleached kraft with a wax coating. Birds Eye points out that printing directly on carton blanks assures accurate positioning of design elements. In addition, elimination of overwraps removes one production step, for savings in material and labor costs.

Carton design features a full-color reproduction of the product on a turquoise background. Preparation data are printed on the carton bottom and on an aluminum-foil lid over the foil tray inside—overcoming a housewife objection that directions often are lost when overwraps are removed. Design by Robert G. Neubauer, Inc., Fairfield, Conn. Cartons by Marathon, Div. American Can Co., Menasha, Wis. Foil trays by Ekco-Alcoa Containers Inc., Wheeling, Ill. Lids by Reynolds Metals Co., Richmond, Va., and Pacific Coast Foil Co., 500 Sansome St., San Francisco 11.

Colorful label line-up for new pet products

Pet Accessories, Inc., Brooklyn, is introducing its "Expert" line of pet-care products in packages whose design is aimed at meeting the requirements of supermarket selling.

For fast identification, paper labels for all six products (four in bottles, two in aerosol spray cans) feature cartoons of dogs and birds, with the brand name displayed on a "medallion" trademark that is designed to suggest high quality. To give the products better visual impact in mass display, a different background color is used on each label. Colors are dark blue, green, light blue and red, respectively, for the four bottled products; orange for dog spray, and red, white and blue for bird spray. *Design by Lee Vitale Associates, 109 E. 36 St., New York 16. Bottles by Carr-Lowrey Glass Co., 2201 Kroman St., Baltimore 30. Bottle closures by Terkelsen Machine Co., 326 "A" St., Boston 10, and J. Rabinowitz & Sons, 2 Hanson Pl., Brooklyn. Aerosol packaging by PowPak-ConnChem, Inc., Bridgeport, Conn. Labels for bottles and cans by Cameo Die & Label Co., 154 W. 14 St., New York 11; Western Printing Co., 855 Sixth Ave., New York, and Walker Ratcliff Co., New Haven, Conn.*



HISTORIES

Tear-open polyethylene bag for records

A printed polyethylene bag, perforated to open cleanly, has been adopted by Columbia Records for its jacketed Harmony phonograph records. It represents one solution to the critical opening problem in packages made of the strong, stretchable film. (See "What About Polyethylene?" series, MODERN PACKAGING, beginning Dec., 1957, p. 98.)

The perforation lines are cut parallel to the folded-over edge of the 1 1/4-mil, prefabricated bag. After hand insertion of the record jacket, the bag is conveyed to a heat sealer where its open end is edge sealed. Besides the factor of protection, the sealed film bag eliminates a pilferage problem caused by unscrupulous shoppers slipping extra records into a single jacket, the company points out. The transparent bag is printed with a green-colored arrow calling attention to the tear-open feature. A price spot, along with brand data, appears in the upper right corner. *Film Bag by Equitable Paper Bag Co., 45-50 Van Dam St., Long Island City 1, N.Y., using Visking polyethylene. Amscomatic 100 conveying and sealing machine by Amsco Packaging Machinery, Inc., 31-31 48 Ave., Long Island City 1, N.Y.*





Strong attachment of glueable polyethylene surface is graphically illustrated by torn fibers when the manufacturer's joint is forced by hand. The glued joint was made with an ordinary starch-type adhesive.

The first glueable



Gleaming interior of new carton for Norwich Pharmacal's Norforms vaginal suppositories has a practical purpose. It efficiently contains the foil-pouched greasy product without staining. The plastic coating is extruded over clay-coated news-back. The gray-tinted carton is overwrapped with orchid-colored cellophane.

Another obstacle to full realization of polyethylene's potential in economical protective packaging^{*} appears to have been removed. This time the achievement is in coatings.

A folding carton of polyethylene-coated board now being used by The Norwich Pharmacal Co., Norwich, N. Y., is the first ever to run successfully on a boxmaker's standard *glue-sealing* machinery. The secret is in a special treatment of the coating by the board maker that now permits the gluing of polyethylene surfaces with ordinary starch-type adhesives.

Equally applicable to polyethylene coatings on paper, the treatment appears to open up tremendous and immediate opportunities for this protective lining in all types of bags and boxes, for the simple reason that polyethylene-coated stock can now be run through standard gluing machines at high speed and without complicated heat sealing or other

cartoned-goods lines that may benefit are bakery products, tobacco, meats, breakfast foods and even chlorinated detergents and frozen foods. Polyethylene-coated bags can protect sugars, fertilizers, photo chemicals, glue and other foods and chemicals.

While the polyethylene coating does not cause any appreciable stiffening of the base stock, it does increase both the tear strength (particularly in the cross-machine direction) and the tensile strength (particularly in the machine direction). Both strength and flexibility are maintained at low temperatures.

Polyethylene coatings which range between 1 and 2 mils thick greatly cut the transfer of water vapor (see chart, p. 94) and thus permit use of this material alone with many products that either lose or gain moisture and had to be packaged in multi-ply containers. As for greases and oils, the surface treatment is reported to increase the natu-

polyethylene coating

Special surface treatment, as applied to coating on Norwich box, may open up entire bag and carton field to the plastic's protective advantages at low, glue-seal cost

special means of adhering these impermeable surfaces. It is the need for special sealing devices that so far has limited the use of polyethylene-coated paper and boxboard.

Unlike most plastics used in packaging, polyethylene has been notorious for its resistance to adhesives—even solvent types. This is because of its strong natural resistance to chemical attack.

Details of the special treatment have not been disclosed while patent applications are pending, but reportedly it is done at only slightly higher cost and with no apparent change in the coating's desirable chemical and physical properties. To the eye and hand, treated polyethylene-coated paper or board is indistinguishable from the non-treated.

Because these coated materials have excellent resistance to such product ingredients as corrosive chemicals, solvents and many greases and oils, and also resist penetration by gases and water vapor, many bagging and cartoning applications may be simplified and improved by their use. Among

ral barrier properties of polyethylene to these compounds. Both 1- and $\frac{3}{4}$ -mil polyethylene coatings are available to satisfy a range of protective needs in the intermediate area of greaseproof packaging.

While ordinary dextrin adhesives have proved adequate to seal this material, it can be sealed with resin-type glues as well. This will be useful particularly for window cartons using acetate films. As a result of the surface treatment, it is not practical to heat seal the coated material.

In the normal automatic gluing procedure, where the coated material is glued back to front, cartons can be handled at high speed, since the adhesive readily penetrates the uncoated surface. If two polyethylene-coated surfaces are glued together, a longer drying time under pressure is necessary. However, a wet set reportedly can be obtained with some adhesives that will hold the carton together while final drying takes place in transit to the next fabricating or filling point.

In the case of Norwich Pharmacal Co., the coated carton is used for its Norforms vaginal sup-

^{*}See "What about Polyethylene?" MODERN PACKAGING, Dec., 1957, p. 98.

positories, which pose a problem in greaseproof packaging. Despite the fact that each suppository is enclosed in a heat-sealed foil pouch, packaging operations tend to leave a trace of product on the outside of the pouch. This compound—which contains polyethylene glycol, a water-soluble agent—quickly passes through ordinary board, staining the package and making it unsalable.

Previously, the company used parchment-lined folding cartons and later glassine-lined containers were used to prevent this damage. But both liner materials, according to Norwich, presented some difficulties in mechanical operations. Occasionally the linings would delaminate at the manufacturer's joint, causing the cartons to break down. Also, the lined boards tended to curl with changes in humidity, producing difficulties in converting.

Adoption of the polyethylene-coated board has solved these problems at a cost increase which Norwich estimates at only 75 cents per 1,000 cartons. The new carton is made from 24-point clay-coated newsback with a 1-mil coating of polyethylene extruded on the inside surface over the clay.

The carton has a special bottom-tuck design and a full-tuck top for easy and fast hand assembly on the Norwich packaging line. With this carton, there is only one glued joint, formed by the manufacturer. But since this joint has been accomplished without the slightest difficulty, on conventional gluing machinery, it is apparent that full-glued flaps could as readily be sealed on conventional cartoning machinery in the packager's plant. A three-color letterpress design on the uncoated side of the carton and an orchid-tinted cellophane over-wrap complete the package.

The product is filled in liquid form into pouches made from roll-fed, vinyl-coated, 1½-mil aluminum foil, formed and sealed on a Norwich-built machine.† These pouches and an instruction pamphlet are loaded by hand into the cartons, which are

then closed and overwrapped on a standard over-wrapper. Cartons hold either 12 or 24 pouches.

To check package performance, three-day oven tests are regularly conducted on production samples. Company reports indicate that the new package is superior to the previously used lined containers in resistance to grease penetration and in strength of the glued joint. The polyethylene coating does not crack when the carton is set up and the glued joint is strong enough to pull fibre, when forcibly broken.

According to the boxmaker, the specially treated, polyethylene-coated board has caused no difficulties whatever. It does not curl, which eliminates a troublesome point in the printing operation, and it runs through presses, blanking and gluing equipment at the same speed as uncoated, solid board.

A relatively inexpensive cold dextrin adhesive is used. It is reported that the board can be efficiently cut or scored from either side.

The board manufacturer reports that there may be a little difficulty in printing on the coated side, if that should be required. It has been done, however, with lithography, and research is now under way to solve the problems for gravure printing.

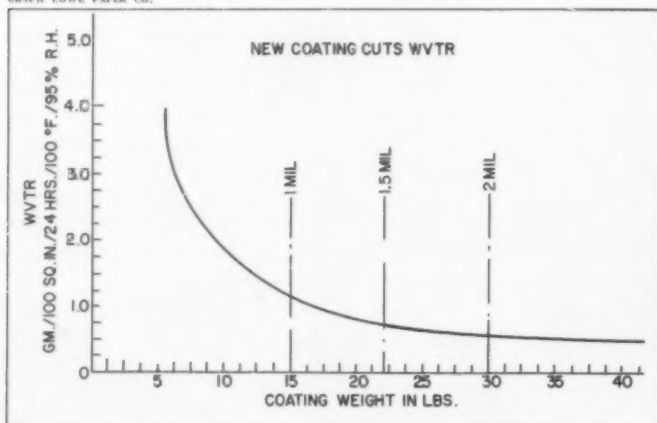
In gluing, says the board maker, rates up to 30,000 cartons per hour were obtained in test runs using standard starch adhesives and machinery.

The packaging advantages offered by glueable polyethylene-coated boards and papers seem to point up a current trend on the part of suppliers to deliver simple, one-ply materials with the necessary barrier and sealing properties previously found only in complex laminations or multiple layers of different packaging materials. With the resultant simplification in packaging operations, these materials should offer packagers immediate opportunities for economies in many applications.

SUPPLIES AND SERVICES: "PG Polycon" polyethylene-coated board developed and produced by Lowe Paper Co., River St., Ridgefield, N.J. Cartons for Norwich produced by The Mid-York Press, Inc., Norwich, N. Y.

† See "Molded and Wrapped in One Operation," MODERN PACKAGING, June, 1946, p. 100.

GRAPH LOWE PAPER CO.



Potentialities of polyethylene-coated board are illustrated by this chart, which shows how economical coatings on standard 24-point newsback sharply reduce WVTR.



Diagonal-casing: why not?

24-CAN RIGHT ANGLE

20-CAN DIAGONAL

Easy-to-handle 20-can carry case for beer suggests a way the diagonal-pack principle can lead to bigger multiple sales at retail level. Compare space savings in slim 20-can case with conventional 24-can shipping container at right.

Quartermaster studies show that staggered-row case packing of cans can reduce container cube by 4.6% and save up to 4,000 sq. ft. of boxboard per carload of product. Here are pros and cons

*By Joseph P. Akrep**

There's brand-new interest—stimulated by the potentials of boxboard cost savings and shipping economies—in the technique of case packing of metal cans and other cylindrical containers and products in a diagonal pattern. (At least three major U. S. packagers, including General Foods, are evaluating the method for possible future application.)

Recent experimental research, conducted by the U.S. Army Quartermaster Food & Container Institute, reveals these significant advantages for diagonal case packing compared with the standard right-angle packing method:

1. Cube efficiency rating 4.6% better, which means less waste space in each case and considerable total space savings in shipping, warehousing and retail-storage shelf stacking. The reduced cube offers

significant freight savings as well, because more goods may be shipped in the same amount of space.

2. Savings of up to 4,000 sq. ft. of boxboard per rail carload—an obviously important monetary consideration to all packagers.

Translating the QMFCI findings for the military into commercial applications, the diagonal-packing method could mean an over-all saving of \$8,000,000 a year for packagers.

There are two problems—neither of which appears to be insurmountable—in the diagonal-packing technique. First, cans cannot be packed in lots of one or two dozen, which represent the basis of traditional pricing structures. Second, adoption of the technique will require conversion of existing case-loading machinery to produce diagonal patterns at high speed.

The Quartermaster Corps' exploration of the possibilities of diagonal case packing was spurred by

*Research Branch, Container Laboratories, U.S. Army Quartermaster Food & Container Institute, Chicago.

the military's ever-present need to find means of reducing shipping-case tare weight and cube—particularly for large-scale aerial resupply in any future military operations.

It was found that case packing of foods in cylindrical cans is a typical example of a packaging method with a high cube loss. Whether packing 12, 24, 36 or 48 cans to a shipping container, the standard method of right-angle patterns means a constant space waste of 21.5% due to voids between cans.

Substitution of 20- and 28-can single-layer diagonal patterns for the standard 24-can right-angled

largest saving (20%, or about 4,000 sq. ft. of fibreboard per carload) is obtained with No. 3 cylinder cans in a one-layer, 20-can pack. It amounts to \$181 in V3s fibreboard per carload in addition to a 4.6% saving in space requirements.

It should be noted that the savings as shown in Table I are based on the standard top-loading carton. Basing the computations on such other types as the end-loading carton would result in similar economies, since the cube saved does not depend on the type of carton used and is in addition to any material savings in carton construction itself. (It has been estimated that end-opening cases use 15% less board than do other cases¹.)

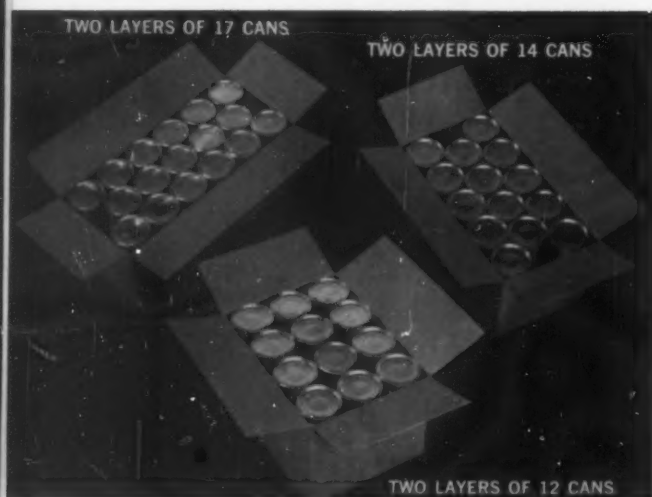
When the product being case packed is of such low density that the railroad car cannot be loaded to maximum permissible weight (toilet tissue, for example) with standard right-angle-packed cases, additional savings in freight costs are possible through diagonal packing. Because the density of the diagonally packed case as a unit is increased, it is possible to get a greater load into the car without regard to the weight factor. This is roughly the equivalent of releasing one railroad car in 20.

The magnitude of the tonnage handled in cylindrical cans—and therefore the potential savings—is not generally appreciated. Data for 1956 indicate that 350,000 carloads of food were shipped in cylindrical cans, of which 15% to 20% were military purchases. The average of the savings figures from Table I on p. 97 is more than \$73 per rail car. If a savings of \$15 per carload is assumed as a conservative figure (including items which cannot be handled in a diagonal pack), it means a \$1,000,000 saving in boxboard for the Department of Defense on military purchases of canned goods alone, exclusive of the value of the space saved. When applied to the national economy as a whole, the estimated value of boxboard savings is more than \$8,000,000 a year—again including the 4.6% space saving.

The improved cube efficiency which results from diagonal packing is most impressive when comparisons are made on a large-quantity basis. For example, a 4.6% savings in cube translates into 46 pallet loads per 1,000—important to both packagers and the military.

Several factors should be evaluated to determine the possibilities for commercial application of the diagonal-pack principle. These include strength of the loaded case and the effect of the method on existing machinery and on established customs, as well as retail distribution problems.

Laboratory tests conducted at the Quartermaster Food & Container Institute reveal substantially simi-



Better cube efficiency through diagonal case packing is dramatized in this photo. In standard right-angle, two-layer pack of 24 cans (bottom), the void between cans causes a space waste of 21.5%. In diagonally packed, two-tier cases of 34 and 28 cans, snug fit of staggered rows saves 4.6% in cube and offers obvious economies in boxboard.

layer revealed a 4.6% savings in cube, with commensurate savings in boxboard required to make the case. An examination of cases packed by both methods shows far less waste area between cans in the diagonal pack. The break-even point occurs when the internal gains due to the diagonal pattern exceed the losses caused by the end voids.

Except for very large cans, such as No. 10, it is possible in each instance to design at least one diagonal pattern which will be more efficient than the standard pattern. Most can sizes are adaptable to several possible alternatives.

Table I on p. 97 shows comparative data for typical containers and indicates the dollar savings in boxboard that can be expected by using diagonal packs to replace standard right-angle packs. The

¹See "End-Loading Can Cases," MODERN PACKAGING, March, 1958, p. 132.

lar performance characteristics between standard and diagonally packed shipping containers. However, the highly promising performance of heavier diagonal packs indicates that the pattern may make for a stronger and more resisting load within the case and supports the walls more efficiently.

The only change that will be necessitated on packaging-line machinery concerns the caser. However, it is believed that many casers will simply require modification. (One packager contemplating use of the diagonal pack reports that conversion of his present casing machinery can be accomplished quickly by the addition of a few relatively inexpensive parts.)

The main problem to be anticipated in any general shift from standard to diagonal case packing is its effect on trade customs—particularly the change in number of cans per case. The whole pricing system is based on a "per dozen" or "per case" quotation for a definite size of pack. It remains to be seen how important such a system really is in this age of supermarkets, in which the exact number of cans per case may be irrelevant as long as it is the most economical pack. It may also be desirable, in view of the quantities sold in such outlets, to base quotations on a "per 100" basis, which might make billing and retail pricing simpler. Some items, such as paper towels and toilet tissue, already have been converted from the dozen pack to cases of 50 or 100.

Since family purchases generally are limited to two or three cans of any one item, consumer acceptance is not a factor in determining number of cans per case. One notable exception is canned beer, for which the six-can carry carton is highly popular. However, the six-pack tends to set an upper limit on the quantity purchased. Beer packaging thus might profit by the introduction of a diagonal 20-can pack to fill the gap between the six-pack and the 24-can case. Because of its smaller cross-section and lighter weight, the diagonal 20-pack is a much easier carry-home item than the 24-can case.

One of the can sizes omitted in Table I on boxboard savings is the No. 202, used for such products as baby food, tomato paste and juice. These cans, as well as small cylindrical jars for mustard, olives and other high-volume products, offer the greatest economies in diagonal case packing.

According to industry sources, normal packing for such items is 24, 48 or 72 cans per case. Because of their light individual weight, however, a 96-can pack is feasible. Unlike the larger can sizes, where no direct comparison between casing methods can be made, these smaller cans can be loaded either in a 96-can standard or a 96-can diagonal pack. In this size, cube saving is increased to 7.5%, compared with 4.6% obtained with the larger cans. In



Lightweight products, such as toilet tissue, promise big savings in shipping costs when case is packed by diagonal method. Since railroad cars cannot possibly be loaded to maximum weight with items of this type, the narrower, higher-capacity, diagonal packs (left, upper right) make it possible to put a greater load into the same amount of space.

other words, the space ordinarily required to stock 12 cases will now hold 13 cases.

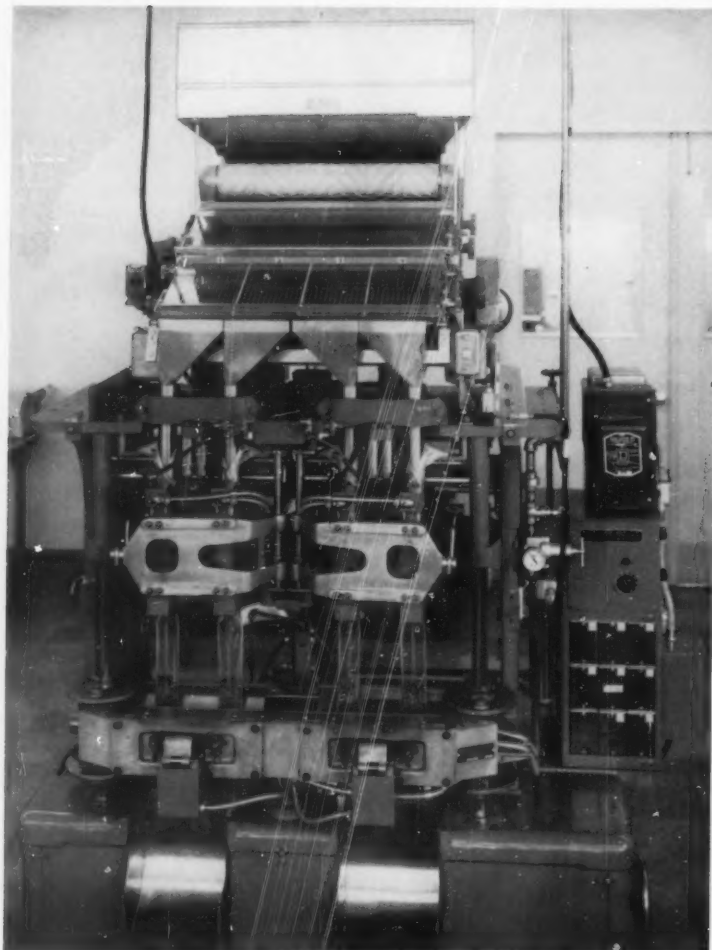
In general, cylindrically packaged products of any industry can be case packed by the diagonal method. The pharmaceutical industry, for example, packs an enormous number of vials, tubes and jars. Also, any cylindrical product can be diagonally packed.

Adoption of the diagonal-pack principle probably will be the result of a gradual tailoring of the method to products for which its use will be most advantageous. Packagers to whom the savings are most immediately obvious will adopt it most readily. The main criteria—as always—will be competitive advantage and increased efficiency.

Table I: Savings in boxboard cost by diagonal case packing of typical can sizes

Can size and case-packing pattern	Dollar savings in rail carloads		
	200-lb.	V3c	V3s
Beer can (211 by 413)			
Standard (2 layers, 24 each)	—	—	—
Diagonal (2 layers, 20 each)	\$8.02	\$13.63	\$18.45
Diagonal (3 layers, 20 each)	53.46	90.88	122.96
Diagonal (2 layers, 28 each)	15.10	25.67	34.73
No. 3 cylinder (404 by 700)			
Standard (1 layer, 12 cans)	—	—	—
Diagonal (1 layer, 17 cans)	68.98	117.27	158.65
Diagonal (1 layer, 20 cans)	78.90	134.13	181.47
No. 2½ (401 by 411)			
Standard (2 layers, 12 each)	—	—	—
Diagonal (1 layer, 20 cans)	—	No savings	—
Diagonal (2 layers, 14 each)	31.36	53.31	72.13
Diagonal (2 layers, 17 each)	51.22	87.07	117.81
No. 2 (307 by 409)			
Standard (2 layers, 12 each)	—	—	—
Diagonal (2 layers, 14 each)	32.22	54.77	74.11
Diagonal (2 layers, 17 each)	52.10	88.57	119.83
Diagonal (2 layers, 20 each)	69.20	117.64	154.16

Machine team



Electrical interlock devised to unite a standard automatic tablet counter (top) with a conventional pouch forming, filling and sealing machine (bottom) is located at right of equipment. Action of the pouch former triggers the release of pre-counted tablets and capsules in a "dump" pattern that enables the counter to keep pace with the packager. Here, all chutes are loading capsules. Normally, the two left chutes handle tablets.

A combination of packaging machines that may be unique—a tablet counter electrically interlinked with a pouch forming-filling-sealing machine—is at work at Nutrilite Products, Inc., Buena Park, Calif., to solve a packaging problem posed by its vitamin-mineral food supplement product.

To match rising sales of its products, the company needed automatic packaging equipment to bag capsules and tablets in polyethylene film—a package that gives the products extra protection from breakage when they are later enclosed in a molded poly-

styrene box. In addition to speed, however, it was necessary to maintain an accurate and exact count on this premium product.

The need for this packaging technique is explained by the design history of the package. Because Nutrilite food supplement is marketed exclusively by door-to-door distributors, the visual product image is a critical element in the selling procedure. The package has to appeal on first sight and reflect the quality indicated by the price.

The original product container consisted of two

By connecting standard automatic counter and a conventional pouch packer with a special electrical timing device,

Nutrilite Products gets precise, high-speed packaging of tablets and capsules

round pill bottles in a simple paper carton. Later square bottles were used. Then the company commissioned a nationally known industrial designer to provide a package with extra sales impact.

The result was a transparent, two-compartment polystyrene box of tapered design. One compartment holds 93 capsules; the other compartment holds 186 tablets. The two constitute a month's supply of the food supplement.

It was soon found, however, that loose tablets were easily broken. To solve this problem, tablets and capsules were pre-packaged in polyethylene bags. To eliminate the need for hand work, the company decided to turn to an automatic bag-forming and filling machine. But the requirement for an exact count remained and this was the occasion for the design of a combination counter and filler that is now the central piece of equipment in the Nutrilite food-supplement packaging line.

Fortunately, it was found that a standard counter could be mounted on top of a conventional, four-chute bag former, filler and sealer with little change in fundamental mechanical action. Nutrilite Products engineers then designed an electrical interlock between the two units so that the counter is controlled by the pouch former. Through solenoid action, operation of the film drawing and heat-sealing mechanisms triggers the pins that hold the tablets and capsules in the counting chutes. The combination will turn out 30,000 pouches per day for 15,000 completed packages.

For this equipment the timing must be very precise, since a single tablet or capsule delayed in leaving the chutes could catch in the heat-sealing area and hold up the packaging operation. Company engineers found that capsules are particularly difficult to handle in this sort of packaging system, since they are not uniform in size and tend to jam in the counting chutes. To correct this, they milled the chutes with a tapered rather than square cross-section, so that each capsule could find its own sliding level. In addition, small hammers were mounted below the chutes to jar the capsules during the critical moment of release.

Another innovation is in the release pattern. Most tablet counters are designed for filling bottles or other small-mouthed containers and so they release the product in a stream to avoid jam-ups. To keep up with the bag-forming machine, on the other

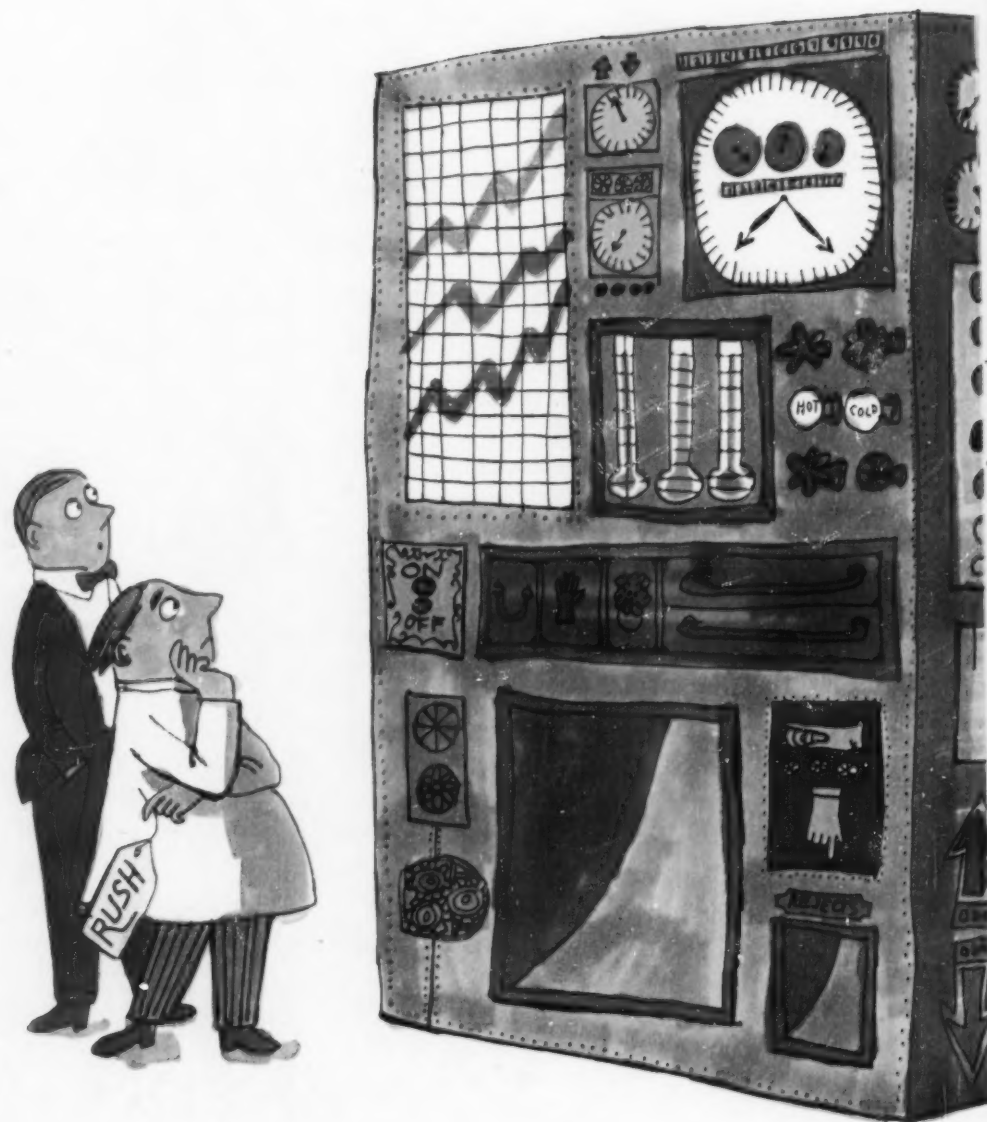
hand, it was necessary to devise a "dumping" action, still without jam-up. The experience of the Nutrilite Products men has been that this adjustment must be made separately for each type of product and filling speed.

The pouches are formed from plain, 1½-mil polyethylene. The sealed bags are conveyed to the packaging line, where they are inspected and placed in the plastic boxes. Since the plastic boxes taper, they are placed upside down in the top half of a fibre-board folding container, designed to simulate a set-up box. The bottom half, guided into place by the shape of the plastic container, completes the package. Twelve units are then packed by hand into corrugated shipping cartons.

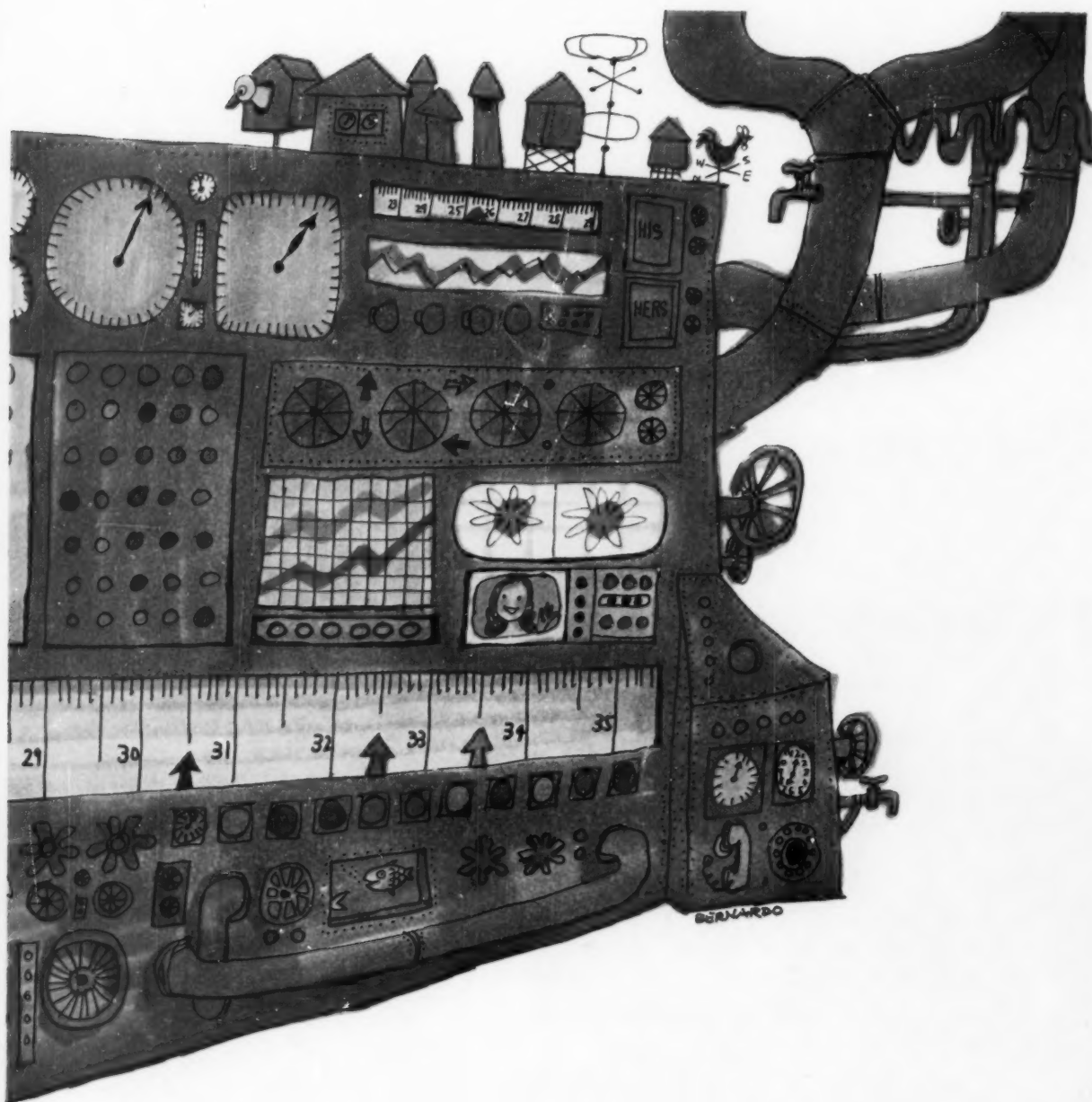
SUPPLIES AND SERVICES: Package design by Raymond Loewy Associates, 425 Park Ave., New York 22. Pouch-making machine by Hayssen Mfg. Co., Sheboygan, Wis. Tablet counter by The Lakso Co., Inc., Fitchburg, Mass. Polyethylene film by Visking Co., Div. Union Carbide Corp., Terre Haute, Ind. Polystyrene box by Industrial Molding Co., Culver City, Calif. Folding boxes by Container Corp. of America, 38 S. Dearborn St., Chicago 3, and Advance Paper Box Co., 1900 W. 62 St., Los Angeles 47. Label by Western Lithograph Co., 600 E. Second St., Los Angeles 54.

Taper design of this molded polystyrene box boosts prestige of Nutrilite's premium-priced vitamins. High transparency permits use of a two-sided label that carries brand identification and detailed nutritional information.





IF NATIONAL CAN'T PACKAGE IT, NOBODY CAN!




If National can't package it in corrugated, nobody can! Corrugated-container users with nation-wide operations find our co-ordinated facilities being constantly strengthened to meet even the most complex needs.

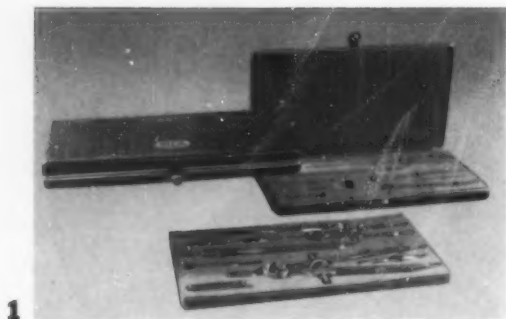
But flexible and responsible *localized* operation is the open secret of our ability to work equally well with our next-door neighbor or a purchasing source a thousand miles away.

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NATIONAL CONTAINER

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1

Packaging

Pageant

1 New glamour for the traditional drawing-instrument case is represented by this metal hinged box with fabric-based, simulated-leather covering, developed for Frederick Post Co. A flocked, vacuum-drawn polystyrene platform is designed for protection and for beauty. Case, Farrington Mfg. Co., Needham Heights, Mass. Platform, W. A. Crook Co., Watertown, Mass.

2 Big savings in shipping costs and storage space, as well as increased product protection, are the reasons cited by W. J. Dennis & Co. for its adoption of a 3-mil polyethylene envelope for 9-ft. coils of Garage Seal weatherstrip. A factor in the selection of the film was the need for a material that would add negligible weight to the product. Envelope, Tower Packaging Co., Skokie, Ill., using Visqueen polyethylene.

3 Because epoxy resin adhesives must be mixed at the point of use and kept free from handling and environmental contaminants, Fenwal, Inc., packs the product in two clear polyvinyl chloride bags, connected by a PVC tube. To mix, a glass ampoule containing a curing agent (in the smaller bag) is broken, letting the agent flow into the adhesive chamber for mixing. A nylon-mesh strainer prevents glass from getting into the adhesive. After cutting the tube, the adhesive is ready for use.

4 Controlled shaker action and protection against moisture are the benefits reported for a fluted-wall, aluminum-foil-and-paper packet being used by Diamond Crystal for its individual servings of salt, distributed through airlines and the institutional trade. The gold-colored packet is opened by breaking along a perforated score line. Shaker packet, Unit-Packet Corp., Wilmington, Mass., using Reynolds foil.

5 Unusual construction of this die-cut, partitioned carry carton used by Jerclaydon, Inc., to merchandise a special offer of Glamorene Liquid permits full visibility of bottle labels, yet provides ample space for promotional copy. The carton has flaps that slip over the necks of the bottles to hold them in place. Carton, Alford Cartons, Div. Continental Paper Co., Ridgefield Park, N.J. Bottles, Hazel-Atlas Glass Div., Continental Can Co., Wheeling, W. Va.



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- 6** A telescoping metal-edge paperboard box that holds \$6,000 worth of electronic "brains" has been adopted by Remington Rand Univac. The sturdy container is partitioned into 20 cells, each of which cushions one \$300 "brain" against shock. Box, National Metal Edge Box Co., Barrington, N.J.

- 7** A leak-resistant, aluminum-foil-laminated paperboard carry carton is used by Land O' Lakes Creameries for Premium Pak'd ice cream. Tapered construction of the white, yellow and red printed carton facilitates product removal, the company says. "Carry Home Packit," Marathon, Div. American Can Co., Menasha, Wis.

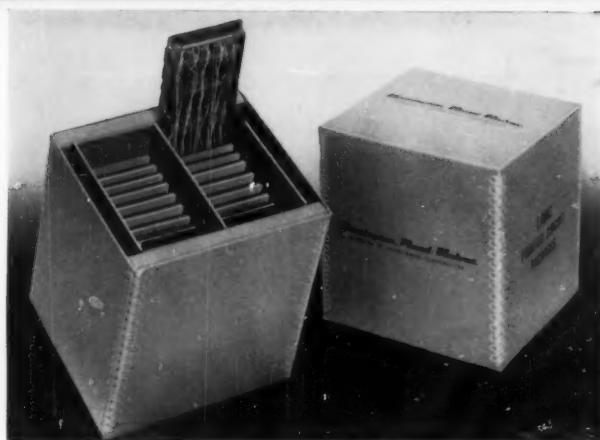
- 8** Designed for effective display in self-selection stores, this printed polyethylene bag for Edgewood Farms' Velvaturf grass seed has identical design on its front and back. Three alternating color panels, carrying minimum copy in large letters, are printed in white, green and blue. A wide unprinted strip and unprinted sections at the top and bottom permit product visibility. Bag, The Dobeckmun Co., Cleveland.

- 9** Christo Poulos & Co. is introducing a new line of fruit specialties in waxed-paper cup containers reported to keep the products fresh and moist over long storage periods. To help protect against moisture loss, a cellulose seal bridges the cover and side wall. A saran window in the cover permits a view of the tempting fruits and aids moisture retention. "Nestyle" container, Sealright Co., Div. Oswego Falls Corp., Fulton, N. Y., using Dow saran. Cellulose seal, The Celon Co., Muscatine, Ia.

- 10** How even the most ordinary item can be repacked for added sales appeal is illustrated by the polyethylene bag adopted by Wilen Mfg. Co. for mop heads. The bag, made of 1¼-mil film, offers full protection against soilage and greater visibility and legibility than the former wrap, in which the ends of the mop head were exposed. Polyethylene bag, Howard Paper Co., Atlanta.

- 11** Smith Brothers, Inc., makes news with a rare introduction of a new product—mint-flavored medicated Smokers Drops. The company's familiar trademark is

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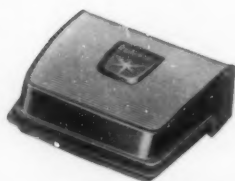
featured prominently on the gloss-coated carton, which has a black background with green and red design elements. The basic motif is carried over to all promotional media. Design, Elmo Anderson Associates, New York. Carton, Fort Orange Paper Co., Castleton-On-Hudson, N.Y., using Du Pont cellophane for the overwrap.

12



Frozen pre-cooked meats that are made ready for the table simply by popping their packages into an electric toaster are available from Dinner-Ready Corp., Tasty Chip Steak Co. and Taylor Provisions Co. All three packages are heavy-gauge, unmounted aluminum-foil pouches, printed with promotional data along with heating and opening instructions. Pouches, Milprint, Inc., Milwaukee, using Alcoa foil.

13



14

The molded polystyrene case for Ronson's new C.F.L. electric razor can be personalized by removing a snap-on butyrate "crystal" that covers the Ronson shield design on the hinged-box cover, replacing the shield with a customer's initials (provided by the company in gold-colored metal) and snapping the crystal back into place. A red flocked polystyrene nest inside the gray-and-gold-colored box has separate compartments for the shaver and cord. The cover is finished in polyester laminated to vinyl and die cut for precise fit. Box, Auburn Plastics, Inc., Auburn, N.Y.

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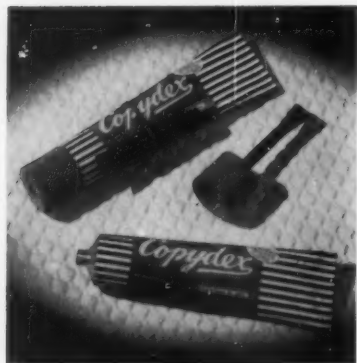


Penn Maid Dairy Products introduces sour cream in one-pint and half-pint vacuum-packed glass jars, reported to increase the product's shelf life in retail stores. Applied-color labeling in blue features a cartoon treatment of a cow's head for easier brand identification. Jars, Owens-Illinois Glass Co., Toledo, O. Metal "Twist-Off" lithographed caps, White Cap Co., Chicago.



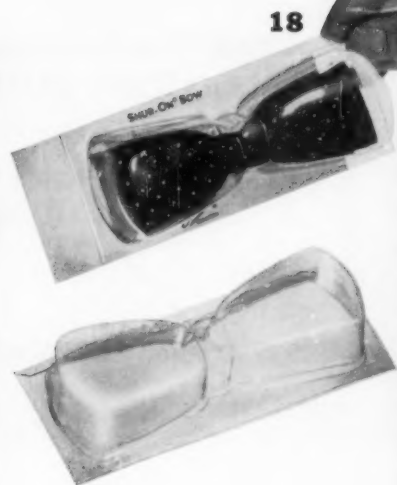
A special internal coating on the polyethylene squeeze tube for Whitehall Pharmacal's "Hopper's Sudden Beauty" cosmetic cream reportedly extends the product's effective life by providing a barrier against the permeation of essential oils and aromatics. To upgrade its fashion appeal, the white tube (available in 1-, 2- and 3-oz. sizes) is printed in red, blue and gold colors. Coated tube, Bradley Container Corp., sub. American Can Co., Maynard, Mass.

16



- 16** The snug-fitting screw closure on the collapsible metal tube for Copydex, Ltd.'s household adhesive is designed for product protection and as the handle for an applicator brush. Attached to the tube by a rubber band, the brush screws into a hole in the top of the tube. Tube, closure and applicator brush, Venesta, Ltd., London, England.

- 17** A spiked screw closure offers convenient opening of the closed-neck collapsible metal tube adopted by Griffin to extend the shelf life of Allwite shoe polish. Gentle hand pressure forces the closure's spiked tip through the neck diaphragm to afford a permanent opening in the green-and-red printed tube. Tube and phenolic closure. Wheeling Stamping Co., Wheeling, W.Va.



- 18** Friedman Bros. & Sons reports a 25% saving in shipping costs since switching to a carded, formed-acetate package for its Shur-On line of bow ties. The transparent blister packs are shipped nested to save on shipping space. Flanged edges of the rigid acetate serve as slide tracks to accept a printed paperboard card. Package, Plaxall, Inc., Long Island City, N.Y., using Campeco acetate. Card, Berger & Gorin, New York.

- 19** The corrugated shipping container for Curtiss Candy Co.'s Marshmallow Animal Circus confections in printed polyethylene bags has drawings on all four side panels that carry out the "circus" theme. A special white outer liner on the carton provides sharper legibility for the red, blue and yellow design. Shipping container, Gaylord Container Corp., Div. Crown Zellerbach Corp., St. Louis. Printed polyethylene bags, The Dobeckmun Co., Cleveland.

- 20** Individual wraps of resin-coated cellophane for American cheese slices—packaged six to a green-and-red printed cellophane overwrap—keep the unused portions of the product fresh longer and eliminate the problem of cheese slices sticking together in the package, reports Clearfield Cheese Co. The entire wrapping operation is done by machine. Printed overwrap, Lustreprint Corp., Buffalo, N.Y. Cellophane, American Viscose Corp., Film Div., Philadelphia. Overwrap machine, Hudson-Sharp Machine Co., sub. Food Machinery & Chemical Corp., Green Bay, Wis.



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Packaging

Pageant



Rules of

Label components generically identified to show elements legally required by most precautionary-labeling legislation.

In 1450 Scotland enacted one of the first laws governing hazardous substances. The Court Apothecary ruled that "all persons are forbidden under the pain of treason to bring home poisons for any use by which any Christian man or woman can take harm." The U.S. 85th Congress is a long time later. But it saw the introduction of three bills† to regulate the distribution and sale of hazardous substances.

The intent of these bills is much the same as that of the 1450 decree. They also are directed to products used in the home. But there is a major difference. The Court Apothecary placed the responsibility on those who purchased or possessed the material. The U.S. legislation defines what the manufacturer or seller shall know and tell the purchaser. This must be done with a *label*. The bills are not unique in this respect. Federal, state and municipal laws and regulations have preceded them in profusion. The scope of the new bills is considerably greater.

* Marketing Dept., Sales Engineering, Esso Standard Oil Co., New York.
† S-1900 (Bush, Conn.), H.R.-7388 (Curtis, Mo.) and H.R.-9063 (Williams, Miss.) The three bills are quite similar. If not acted upon in the present Congress, they probably will be re-introduced.

Today we presume a manufacturer is entirely familiar with each of his products. He knows how it should be used to attain the function he says it will perform. He must indicate how this can be done safely. He is expected to know what is best to be done in case of accidental mishap or intentional misuse. His responsibility extends to what he implies as well as what he says on the label. He is liable for omission if some point of importance to the user is absent from the label.

The responsibilities of the supplier are being broadened. By statute and regulation, more and more products that are hazardous will be required to be cautionary labeled. The make-up of the label in terms of information to be given for the benefit of the user will be specified.

But there is a peculiar lack of information on how good labels of this type can be written. There is full consciousness of the need for fulfilling the producer's obligation. But those who write warning labels have not told how they do it.

Before considering label writing and who should

Important to many packagers: a model law for uniform labeling

Led by the powerful American Medical Assn., more than 40 organizations are behind a current move for stringent and uniform labeling of hazardous substances that would affect packagers in many industries. Simultaneous with Congressional debate on the subject, the association's Committee on Toxicology has drafted model legislation designed to set Federal and state standards for the labeling of such products as paint and maintenance supplies; laundry and dry-cleaning chemicals; cleaning, polishing and deodorizing products; auto care and repair supplies; art and hobby items, and toys containing chemicals.

The degree of uniformity, of course, will depend on action by Congress and by each of the state legisla-

tures. This would create new labeling problems for packagers distributing in the various states.

Out of a series of conferences called by the American Medical Assn. at its Chicago headquarters is expected to come the final version of the proposed "Uniform Hazardous Substances Act." Government, agricultural and medical organizations were represented at the first conference in May; trade associations, toxicity-testing laboratories and chemical trade unions attended the second session in July.

The model law would stipulate label information covering possible harmful ingredients, their potentialities for harm, directions for safe use by the consumer and first-aid instructions.

cautionary labeling

Thanks to diligent work of the chemical manufacturers

a nationally recognized code is evolving.

Here's an up-to-date guide to requirements for hazardous products By John B. Tuttle*

do it, the reader should know some of the laws and regulations already in existence.

While there are many previous statutes, present purposes are served by going back no further than the Federal Caustic Poison Act of 1927. This covers 12 caustic or corrosive substances in certain concentrations, in containers "suitable for household use." Interpretation and enforcement is by the Food & Drug Administration. Here the work of the label writer is relatively easy. In the simplest terms, packages of the specified materials must carry labels made up of the word "Poison" in particular type size, along with an "antidote" statement. The Act has suffered the obsolescence which is typical of lists of specific drugs or chemicals. It fails to serve general hazardous-chemical needs today.

Another Federal law is the Food, Drug & Cosmetic Act of 1938. It is also interpreted and enforced by

the FDA. Here is concerned the interstate shipment of foods, drugs and cosmetics. The Act establishes definitions of adulteration in foods, sets forth certain prohibited acts, establishes label requirements, penalties and general administrative provisions. Drugs are deemed "misbranded" unless the label contains certain information, so rendered that it is likely to be read and understood by the purchaser. This is true also if the label does not comprise adequate directions for use and warnings against misuse



Industrial label includes generic name of hazardous ingredient, cautionary text and storage directions.

Household insecticide aerosol carries composition and cautionary text conforming to Chemical Specialties Mfrs. Assn. Aerosol Guide and Federal Insecticide, Fungicide and Rodenticide Act (1947).

under certain pathological conditions or by children, when such use is dangerous to health. Interpretative regulations and rulings have been issued from time to time as the need arose.

The Department of Agriculture administers the Federal Insecticide, Fungicide and Rodenticide Act (1947). It covers an increasingly important group of chemicals called "economic poisons" or more commonly "pesticides." These chemicals are defined as to class. A list of the required warning labels with a discussion of their use was published in December, 1954, as a revision of Interpretation 18 entitled "Interpretation With Respect to Warning, Caution and Antidote Statements Required to Appear on Labels of Economic Poisons."

Transportation of hazardous substances is covered principally by two regulations.

One is "The Interstate Commerce Commission Regulations for Transportation of Explosives and Other Dangerous Articles by Land and Water in Rail Freight Service and by Motor Vehicle (High-

Barrel tags, weatherproofed and conforming to the American Petroleum Institute Bulletin 2511 (1958) for petroleum products. These tags are to be wired to bungs.



way) and Water." Issued under the Authority of Public Law 772, enacted June 25, 1948, and available from the Bureau of Explosives, the regulations cover explosives and dangerous chemicals. Labeling requirements as well as container and packaging specifications are included.

Another is the U.S. Post Office Department Regulations (1954). It concerns the mailing of poisonous, flammable and other dangerous materials. Certain materials are deemed non-mailable, others must be packaged in prescribed manner and must be "not outwardly dangerous, or of their own force dangerous or injurious to life, health and property." Labels need not spell out data as to the contents, other than a simple warning to protect postal employees. Recent interpretations of postal regulations by the Department place the responsibility for compliance directly on the shipper, as contrasted with former practice whereby postmasters were authorized to interpret postal regulations and accept or reject shipments.

To the label writer, state regulations governing the labeling of hazardous substances may appear even more formidable in scope and number. A study of them discloses a striking similarity in requirements. State laws do differ in administration. The responsible agency may be either the Board of Health or the Department of Labor and Industries. Space does not permit a review of state regulations here. Laws and regulations in this field are in effect in New Jersey, Massachusetts, Indiana, California, Oregon, Illinois, New York, Kansas, Connecticut, North Carolina, Texas and the Territory of Hawaii. Packagers should carefully review state regulations, although they are generally based on principles of the Manufacturing Chemists Assn. (MCA) and the Chemical Specialties Mfrs. Assn. (CSMA).

Work of the associations

The most striking similarity in state laws is in definitions of the hazards covered. Here are seen the results of the pioneering spirit of such industry groups as the MCA. This group early realized the need of a guide for manufacturing chemists to the precautionary labeling of chemicals.

MODERN PACKAGING reviewed MCA's early efforts in September, 1945. At that time MCA Manual L-1, "Warning Labels," contained 22 pages. Now in its Fourth Revision, it has grown to 115 pages. It is invaluable to anyone who must write the copy for precautionary labels.

Another helpful group is the CSMA. This organization has prepared a "model" law governing the labeling of hazardous products which are intended for general household use.

The ranks of the trade organizations working for uniform labeling principles have been increased by

Table 1: Selection of precautionary statements*

Products will be encountered that present hazards varying in kind or degree from those listed. Appropriate statements of hazards, precautionary measures and instructions in case of contact or exposure should be prepared on the basis of the properties of the product, following the pattern and general phraseology of the following table. Parenthetical words in the table express variations in kind or degree and are to be used where applicable.

NOTE: *Poison*, with skull and crossbones, should be included if the product meets any of the criteria for "poison" set forth in Manual L-1 or as required by law. If *poison* is used, add first-aid statement as required.

Class of hazard	Statements of hazard	Precautionary measures	Instructions in case of contact or exposure
<p>IMPORTANT: Select applicable statement(s) only. Selection(s) to be based on actual hazards of use and degree of hazard. In some instances where a mild caution is indicated, the statement of hazard may be omitted and adequate information provided by the statement of precautionary measures</p>			
<p>IMPORTANT: Select applicable statement(s) only. Selection(s) to be based on actual hazards of use and degree of hazard. In some instances the omission of a precautionary statement may be justified where the measure to be followed is obvious from the statement of hazard</p>			
<p>IMPORTANT: Select applicable statement(s) only. Selection(s) to be based on necessity for prompt action in order to avoid serious effects</p>			
I	Liquids flashing at 150°F. or below (Flash points are determined by the Tagliabue open-cup method) (A) Flash point 20°F. or below (B) Flash point above 20 to 80°F., inclusive (C) Flash point above 80 to 150°F., inclusive	Extremely flammable Flammable (Combustible)†	Keep away from heat (sparks) and open flame Keep container closed (and away from heat) Use with adequate ventilation
II	Oxidizing agents	Strong oxidant Contact with combustible (other) material may cause fire	Store separately (away) from and avoid contact with combustible (other) materials Avoid contamination of clothing as it becomes dangerously flammable when dry Keep container closed (and away from heat) Avoid contact with skin and eyes
III	Materials giving vapors rapidly toxic or extremely irritating on exposure for a short time or to low concentrations	Vapor (extremely) hazardous (irritating) Hazardous liquid and vapor (gas under pressure) Vapor poisonous if inhaled Vapor may be fatal if inhaled (See NOTE above)	Do not breathe vapor Do not get in eyes, on skin, on clothing Use only with adequate ventilation Keep container closed (and away from heat) Have air-line respirator or self-contained oxygen respirator available for emergency
IV	Materials giving vapors hazardous from prolonged or repeated exposures or exposure to high concentrations	Vapor harmful Causes irritation of eyes, nose and throat	Use only with adequate ventilation Avoid (prolonged or repeated) breathing (of) vapor Avoid contact with skin, eyes and clothing Keep container closed (and away from heat)
V	Gases and vapors physiologically inert	Gas (vapor) reduces oxygen available for breathing Releases heavy gas (vapor) which may cause suffocation	Use with adequate ventilation Keep container closed Do not enter storage areas unless adequately ventilated
VI	Materials in dust form hazardous from inhalation or contact	Hazardous (harmful) dust Harmful if inhaled Causes irritation of skin, eyes, nose and throat	Do not breathe dust Avoid breathing dust Wash thoroughly before eating or smoking Avoid contact with skin, eyes and clothing
VII	Skin irritants—corrosive	Causes severe burns Causes burns May cause burns	Do not get in eyes, on skin, on clothing Avoid contact with skin, eyes and clothing Avoid exposure to (concentrated) vapor
VIII	Materials causing skin irritation after prolonged or repeated contact	Causes skin irritation May cause skin irritation	Avoid (prolonged or repeated) contact with skin Wash thoroughly before eating or smoking Avoid exposure to (concentrated) vapor
IX	Materials toxic through skin absorption	(Extremely) hazardous (harmful) solid (liquid) (Rapidly) absorbed through skin (See NOTE above)	Do not get in eyes, on skin, on clothing Avoid contact with skin, eyes and clothing
X	Materials toxic if swallowed	Poisonous if swallowed May be fatal if swallowed Harmful if swallowed (See NOTE above)	Wash thoroughly before eating or smoking Wash thoroughly after handling Do not breathe dust (vapor) Avoid breathing dust (vapor) Do not take internally

*Adapted and reprinted by permission from pp. 16-17 of Manual L-1 of the Manufacturing Chemists Assn., Fourth Revision, 1956.

†Where required by law.



Special state label approved by Massachusetts under Commonwealth Regulation, Bulletin No. 11, Chapter 149, General Laws (1957).

the American Petroleum Institute, the National Paint, Varnish & Lacquer Assn. and the National Agricultural Chemicals Assn. Each brings special skills covering particular groups of household and industrial products.

Reproduced here completely, with permission, is Table I from the Fourth Revision (1956) of MCA Manual L-1. It is a hazard-classification and label-wording guide. It may prove to be the best single resource the label writer has. With all his product data compiled, the label composer should use it in selecting the wording most appropriate for the label.

Its regular use will help attain the phrase uniformity so desirable in precautionary labels.

While of great assistance, Table I must be clearly understood to be correctly applied in selecting label wording. Consider the columns successively, from left to right. From the first column select the one or more hazard classes involved. Evaluate these according to the degree of severity and importance. Then and *only* then should the second column of the table be considered.

In the second column it is *not* intended that *all* the phrases be used. Choose only the one or two which most accurately state the risk for use on the label. These words are to alert and inform the user. He should not have to discriminate between two or more phrases of similar import.

When judicious use of the first two columns has been made, the last two may be consulted. With the guideposts set, the details of the action to be avoided or action to be taken can be selected. Here again, *not all* the phrases should be used. One or two of them will usually adequately inform the reader. If selection is made with care, his comprehension will be more complete and his response more effective.

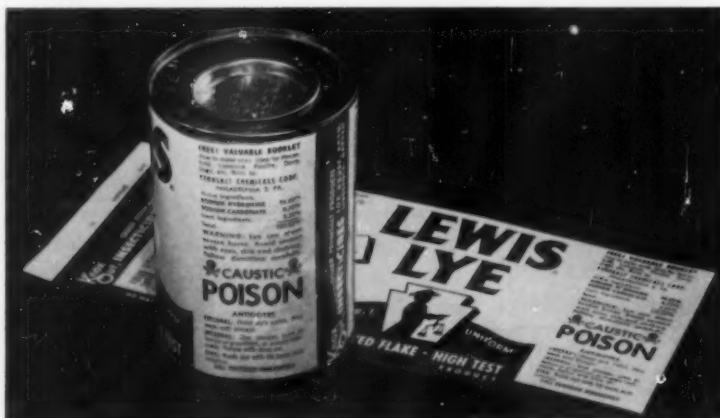
At best, this table is simply a guide for hazard classification and the selection of precautionary label wordings. Most of the statements in the last two columns are suitable for either household or industrial packages. Those that are intended solely for one or the other are obviously so written.

Principles

The principles of good cautionary labeling now generally recognized are:

(1) Each chemical product presents a distinct problem and must be treated individually in the light of its own characteristics. Conclusions regarding the hazards of a product cannot safely be drawn either

Household lye can labeled with composition, text on hazard and antidotes complying with Federal Caustic Poison Act (1927).



from the properties of the materials from which it is formed or by analogies based on chemical structure. The assessment of the hazardous properties of each substance applies equally to mixtures as it does to simple substances. Warning statements cannot be prepared for mixtures by a formula based upon the percentages of the various constituents present and their known individual properties.

(2) All statements on warning labels must be brief, accurate and expressed in simple, easily understood terms. Plain people must be encouraged to pay them heed. Variety in the warnings for similar hazards must be minimized. Uniformity in language to indicate the same hazards and the same degree of hazard is desirable. Through association, it fosters understanding by all.

(3) Warning labels should be used only when and to the extent necessary. The use of warning labels on relatively harmless products or the use of unnecessary wordings promote a disregard of these labels and defeat their purpose. Inclusion of the word "Poison" either with or without the skull and crossbones on a label should be limited to those cases where the product is a poison according to a definite toxicity standard, or where such use is required by law. When it is used, this legend should be in addition to the other warnings that appear on the label. It should not take the place of such signal words as DANGER and CAUTION.

(4) Warning-label statements should represent the best knowledge of the product and its behavior. If these data are not adequate, the label should recognize this and the unknown or experimental nature of the material should be indicated.

(5) Warning statements should be grouped together in a prominent place on the label. They should be printed in easily legible type which contrasts by typography, layout or color with other printed material. The label should be affixed firmly to and in a conspicuous place on the container.

Those responsible for cautionary label composition should carefully review MCA Manual L-1 and the CSMA Bulletin, "Background Information for the Preparation of Warning Statements for Chemical Specialties," and American Petroleum Institute Bulletin 2511, "Precautionary Labels."

Of primary importance to anyone who prepares to write product labels of this type is a description of the hazards involved in product use. This description can best be prepared from a compilation of all the relevant information on the nature and uses of the product. Once the hazards have been clearly defined, it is desirable to classify them. Many products present more than one type or severity of hazard. In general, the most serious hazard should be presented first for ready recognition and em-

phasis. It is unwise, however, to try to cover too many contingencies, particularly in terms of misuse. The aim must always be to cover significant hazards under normally expected conditions of use.

The Enjay label for methyl ethyl ketone illustrated here shows a typical warning label. Its components are generically named. These are the elements legally required by most precautionary-labeling legislation. They are of equal importance except with very small packages. With these, some abbreviation may be permitted. The writer should come quickly to know these elements by name. Once the habit is acquired, it is easier and more direct to ask, "What's the signal word?" or to say, "Flammable is the complete statement of hazard." In writing cautionary text, always use the chemical or commonly recognized generic name of a product with its brand name. Do not use the brand to hide identity. The label should guide a physician on what is best to be done and help users avoid injury.

The effective precautionary label must be a true estimate of hazard and risk based on experience, laboratory testing (especially biological assay) and the inherent chemical and physical nature of the finished product. Thus several skills combine as prerequisites of the label's composition. A background of chemistry, some aspects [Continued on page 164]

About the author



John B. Tuttle, author of this report on precautionary labeling, is responsible for all such labeling at Esso Standard Oil Co., New York, and the Enjay Co., an affiliate marketing petrochemicals. A chemist, he started with Esso Laboratories in 1929. Since 1935 he has been in the marketing department, where he is now special assistant to the manager of sales engineering. A member of the Manufacturing Chemists Assn.'s Labels and Precautionary Information Committee for five years, Mr. Tuttle also serves on the Labeling Committee of the American Petroleum Institute.

Corrugated pre-pack doubles as display



Interesting on several counts are the new corrugated boxes used by Rival Mfg. Co., Kansas City, for "Kitcheneer" and "Shred-O-Mat" kitchen utensils. First, they illustrate again the way in which fine color-printing techniques are giving corrugated board wider currency as a material for consumer pre-packs (see "Fine-Screen Pre-Printing," MODERN PACKAGING, June, 1958, p. 105). Second, the boxes convert quickly into attractive counter displays, without the need of separate point-of-purchase promotional material.

To convert the box into a display unit, the dealer simply folds back the die-cut cover, which thereby becomes a stand-up rear display riser. Promotional copy printed on this panel calls attention to various uses of the utensil.

To promote family identity throughout its line, the company employs the same basic design on each corrugated box, with color keying (green and black, or yellow and black) to help differentiate the various products. On all four side panels, the Rival name appears in a repetitive diagonal pattern set against a striped background design. Corrugated "Pre-paks" by Hinde & Dauch, Sandusky, O.

Display Gallery

Autumn leaves

Lentheric, Inc., New York, is giving point-of-purchase impetus to its "Tweed Fall Fashion Fragrance" promotional program by supplying department stores and other retail outlets with a metal counter-display unit that features a wire back riser shaped like an oak leaf.

The free-form, gold-colored leaf is faced on one side with paper of the same design as that which appears on all of the company's boxed Tweed toiletry products. A paperboard card glued diagonally across the wire leaf identifies the Tweed display and carries the theme of the promotion: "Wonderful things happen when you use Tweed." To continue the autumn motif, the card has a dark brown background. Lettering of the promotional copy is aquamarine in color and the brand name is printed in white.

The metal display stand's shelf is printed with a grained-wood pattern. Supported by four gold-colored wire legs with rubber tips, the shelf offers display space for up to five different products. Additional packages can be grouped around the base of the compact counter-merchandising unit for greater display appeal. Display by Associated Display Services, Inc., 49 E. Oak St., Chicago.



How to display more product in less space

Piggy-back stacking in a counter-display carton adopted by A. S. R. Products Corp., New York, to merchandise its carded combination of 40 Pal razor blades and a free scraper tool suggests a way packagers can put more items into less display space, thus reducing material costs and enhancing the prospects of winning preferred in-store position.

The cards, bulky by reason of the razor-blade package and the scraper tool, are packed 12 to a carton. By standard packaging procedures, the display carton would hold only six cards. But since they are packed stagger fashion—with the bottom edge of one card riding atop the razor-blade package attached to the card behind—space that would otherwise have been wasted is put to use. Tabs die cut in the colorful one-piece carton fold in to hold the individual cards securely in place. (The cards themselves have die-cut holes in the top to permit hang-up display.) The scraper tool is fastened to the card by staples and the razor-blade package is held in place by a die-cut tab that slips into a slot in the back of the package. *Cards and display carton by Chopp Printing Specialties, 350 Hudson St., New York 14.*



Display Gallery



Bottle stopper

No packager will dispute the fact that the ideal point-of-purchase display piece is one that is economical to produce, convenient for retailers to spot on precious floor space and novel enough to attract shoppers' attention the moment they enter the store. A way to achieve these goals is suggested by the 6-ft.-tall paperboard cutout reproduction of an "Old Glenmore" bourbon-whiskey bottle which is now being distributed to liquor dealers by the Glenmore Distilleries Co., Louisville, Ky.

The king-size lithographed display, die cut from 70-pt. board, is printed in gold, amber, black and white. Copy and all design elements are the same as those on the actual bottle. The point-of-purchase unit is shipped to dealers knocked down and reportedly can be set up without difficulty in only a few minutes.

A swing-out glued easel back affords secure stand-up to the display, which can be placed almost anywhere in the store to attract customer attention without materially affecting available floor space. For storage, the unit can be folded down to a height of 4 ft. *Display by Reynolds-Foley Co., 9803 Taylorsville Rd., Louisville, Ky.*

NEW LABEL

OLD LABEL



Big as life is the natural-color photo of a sizzling steak against white background on Mirro's new label for broiler. Old label had yellow background, illustrations with less-natural colors inked in. Note how price spot (lower right) on new label repeats the shape of strong, new, free-form trademark at top. Old label was cluttered with too many confusing ideas, lacked brand-name strength.

More force for Mirro

*A pioneer self-service seller
of aluminum cookware decides it's time
for even stronger emphasis on
brand recognition, product information—
and appetite appeal of the end result*

The outstanding success of the housewares industry in adapting its packaging and labeling to the requirements of self-selection selling has been frequently chronicled in these pages. With the aid of packaging-wise rack merchandisers, the makers of pots and pans learned quickly that to sell a cake pan you sell the cake, and to sell a steak broiler you sell the sizzle. Through pictorial labels you sell the result, rather than the means to the end.*

Prominent in this movement has been the Mirro Aluminum Co., Manitowoc, Wis. But, noteworthy though its packaging has been, Mirro decided months ago that it could be even better. After looking over its line of aluminum ware with a critical eye, management made these preliminary decisions:

Some Mirro items needed more informative merchandising labels, with really mouth-watering food illustrations. Others needed packages still better geared to self-service requirements.

And some Mirro products merely required a new trademark label with stronger brand identification.

The trademark label was developed first. A major

*See "Super-Selling Housewares," MODERN PACKAGING, Dec., 1954, p. 104.

problem was the selection of a modern, workable design for the Mirro trademark. A versatile design was required, as it had to be applied to a variety of different sizes, shapes and situations. The words "Mirro, The Finest Aluminum" were to remain in the established lettering arrangement, but on a new background design.

Mirro artists and advertising men worked closely with the company's advertising agency and creative lithographers in developing the new format.

Suggested designs were numerous and varied. Parallelograms, squares, rectangles and oval-shaped designs were proposed. The final selection was a free-form design that is both modern and practical. Although printed in yellow, black and red on the label, it can be used effectively with one or two colors and lends itself well to all visual media.

Completion of the Mirro trademark label developed rapidly once the design was approved. An identifying red band across the bottom of each label and a convenient pricing blurb for self-service marketing were incorporated. In final form it features the new trademark and the *Good Housekeeping* Seal of Approval against a white background.

This basic format was carried over to embrace all Mirro merchandising labels and packages. Food or product illustrations are set off against a white background, which also incorporates the new Mirro trademark and the *Good Housekeeping* seal. A white background was selected because it suggests a sanitary, wholesome look and also because it provides best contrast for food illustrations.

A survey was conducted to test the new label's acceptance among homemakers. The survey consisted of a comparison between the old label and the new one. Homemakers overwhelmingly favored the new format, the survey revealed.



The job of redesigning all Mirro merchandising labels was a big one because the diversified Mirro line includes more than 200 items. Label size and shape had to be tailored to each individual item. The Mirro trade name, food illustration and copy had to be built into each label accordingly.

The new, full-color, varnished labels replace the previous green, orange, yellow and black Mirro labels. The old label illustrations were made from black-and-white photographs with the color "faked in" by the engraver. Ektachromes are used for the new label illustrations because they permit much more realistic, sharp and appealing reproduction.

The new trademark has been extended to embrace every possible situation in which the Mirro name is used. Sales brochures, shipping cartons, display cartons, letterheads, office forms, water towers and trucks, among others, carry the new design to assure its continuity and complete follow-through.

Packaging changes also [Continued on page 166]

SUPPLIES AND SERVICES: Labels by Gugler Lithographic Co., Harris & Smelser Sts., Milwaukee, and Phillipp Lithographing Co., 1422 N. Fourth St., Milwaukee. Folding cartons by A. Geo. Schultz Co., 433 W. Claybourne St., Milwaukee, and Paper Box & Specialty Co., Sheboygan, Wis., using Du Pont's polyester film for carton windows.



Protected, but visible are mold sets in new polyester-windowed display cartons. Old package was an easel-back open carton that hogged dealer's display space, gathered dust, invited pilferage and failed to suggest end results so appetizingly.

Unmistakable brand identity is objective of simple label on saucepan. Mirro's new free-form, red, yellow and black trademark design is flanked by *Good Housekeeping* Seal of Approval and price spot.

GIFT TWIST

An enterprising pretzel maker shows that even the lowliest of products has gift appeal when it rides to market in a package of charming design and lasting re-use value

Even a product as common as the pretzel can be elevated to the status of a gift item. This has been proved by the imaginative new packaging program introduced by Bachman Bakeries Corp., Reading, Pa., pretzel bakers since 1884.

Since the product itself obviously has insufficient monetary value to make an impressive gift, Bachman has put high value into specially designed and gaily decorated lithographed metal boxes which have specific re-uses. Inside the containers, pretzels are packed in bulk or in individual, printed-cellophane pouches or waxed-paper bags.

Designwise, the bakery makes good use of its Pennsylvania Dutch country locale and employs hex signs, Amish carriages and other such symbols for a gay and colorful effect. The containers are lithographed so that the seam edges neatly match into an unbroken, continuing design.

A feature of most of the boxes and canisters is a four-color-lithographed, friction-fit cover stamped

from 128-lb. blackplate and so shaped that it can be used as an attractively designed serving tray.

One of the most successful Bachman packages is its three-layer "Wastebasket Assortment," with the snack-tray lid and a body which provides a colorful wastebasket featuring three Lancaster County Amish scenes. Smaller containers, of course, can be used for sewing articles, cookie storage, etc. Leaflets placed inside the canisters and mailed to customer lists call attention to package re-use.

The bakery also makes up special private packs, one of the most recent being a five-color canister of pretzels distributed this year by the Reading Railroad to mark its 125th anniversary.

Individual cellophane packaging of butter pretzels and beer pretzels helps push the Bachman name and repeats the Amish designs found on the canisters.

SUPPLIES AND SERVICES: Containers designed, lithographed and manufactured by the J. L. Clark Mfg. Co., 2300 Sixth St., Rockford, Ill.

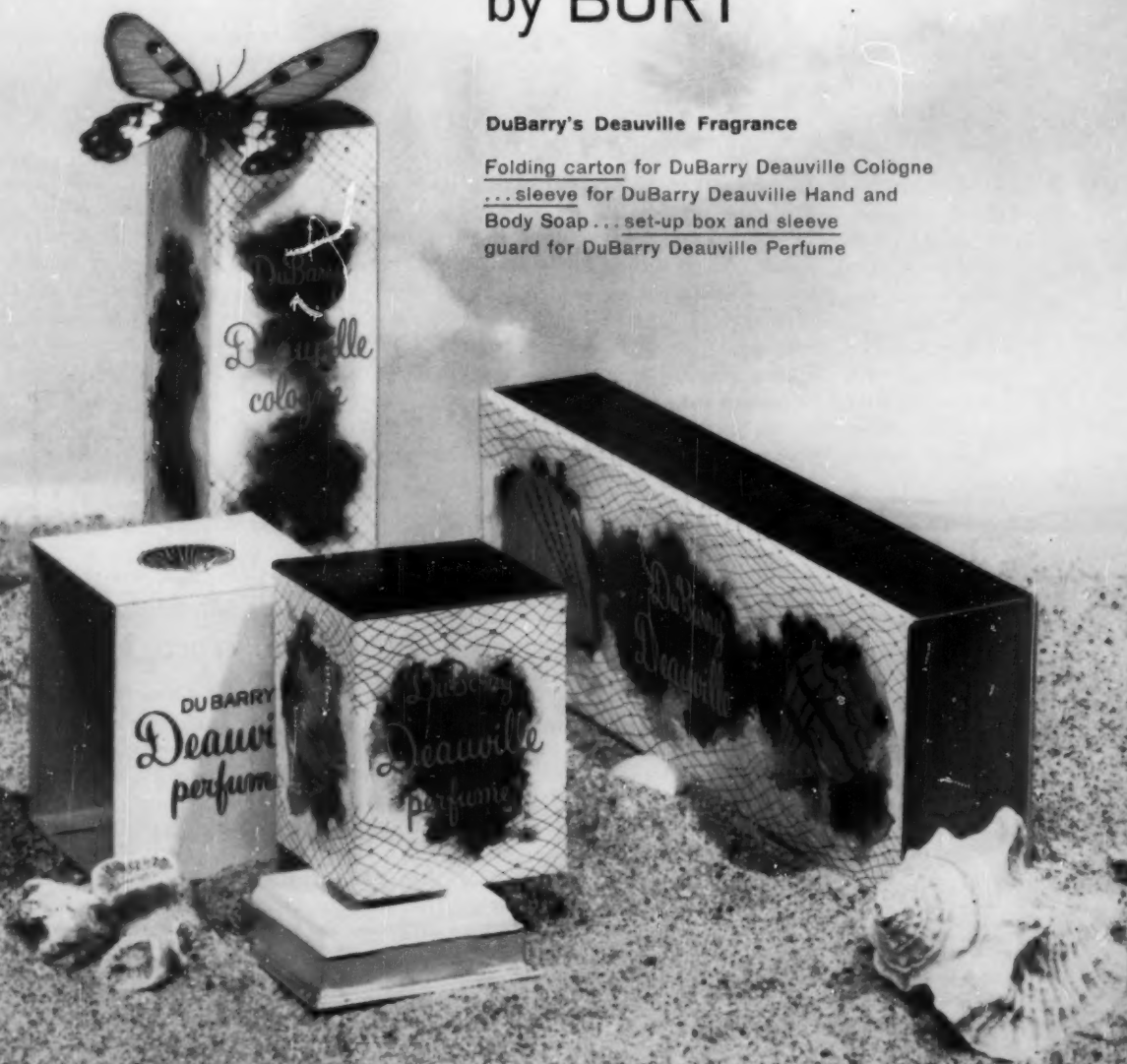
The package sells on its own usefulness—and incidentally moves a lot of pretzels for Bachman Bakeries. Large canister at left is built to be a wastebasket. Both canister and smaller container have lids designed for re-use as serving trays—incidentally promoting the consumption of pretzels. Railroad design on metal container at right was created for Reading Railroad's 125th anniversary.



Another family of prestige products packaged by BURT

DuBarry's Deauville Fragrance

Folding carton for DuBarry Deauville Cologne
...sleeve for DuBarry Deauville Hand and
Body Soap... set-up box and sleeve
guard for DuBarry Deauville Perfume



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Shelf-life determinations

A report from Germany on packaged moisture-sensitive products, making use of sorption isotherms, and of WVT data on several types of packages

By R. Heiss*

The shelf life of moisture-sensitive products is mainly determined by the sorption isotherm curve, the initial moisture content and the permissible final moisture content, as well as by the ambient humidity. In the case of products protected by a water-vapor-tight barrier also, the water-vapor permeability of the closed package and the proportion of volume to surface of goods must be taken into account.

The moisture sensitivity of the product, the ambient humidity and the turnover period determine the selection of the package. To avoid unnecessary expense, it is wise to determine whether any of the packaging requirements can be met by simpler methods, such as a change of formula, air conditioning of storage facilities, lowering of storage temperature, use of desiccants, quicker turnover or other suitable means.

Changes in quality

The changes wrought by the influence of moisture may be of different kinds and can be caused either by moisture increase or decrease brought on by:

1. *Physical processes*, such as desiccation accompanied by hardening, or moisture absorption accompanied by caking, loss of snap and other undesirable consequences.
2. *Physico-chemical processes*, such as crystallizing from over-saturated melts and formation of hydrates.
3. *Microbiological processes*.
4. *Chemical processes*, which may be divided into non-enzymatic processes, such as browning reactions

or auto-oxidative changes, and enzymatic processes of constituent enzymes, both phenomena being greatly dependent on moisture content.

All these changes are more or less time reactions and, moreover, dependent on temperature. Among jointly occurring changes, that change is most important which leads at first to a noticeable quality deterioration, although, with some products, loss of nutritive values or vitamins is also important.

Thus the establishing of a permissible limit of salability is more a matter of judgment, to be individually decided for any given product. With dried

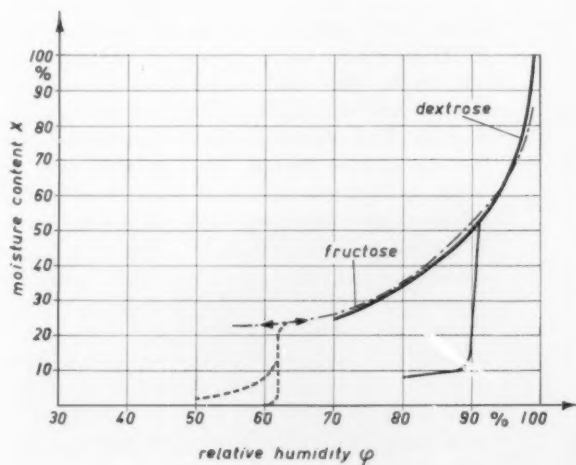


Figure 1. Adsorption and desorption isotherms of dextrose and fructose at 20 deg. C.

*Institute of Food Technology & Packaging, Munich, Germany.

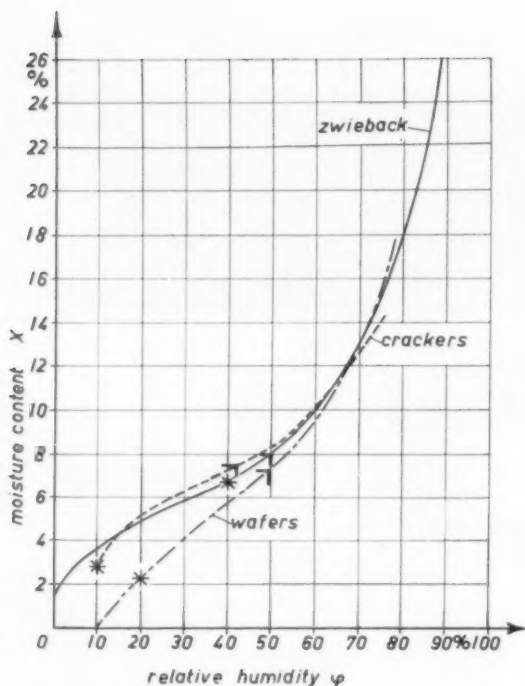


Figure 2. Sorption isotherm of zwieback, wafers and crackers at 20 deg. C. Asterick indicates initial moisture content, right-angle mark indicates limit of salability.

fruits, for example, the moisture content for best taste and for maximum shelf life are as a rule not identical; therefore a compromise must be sought.

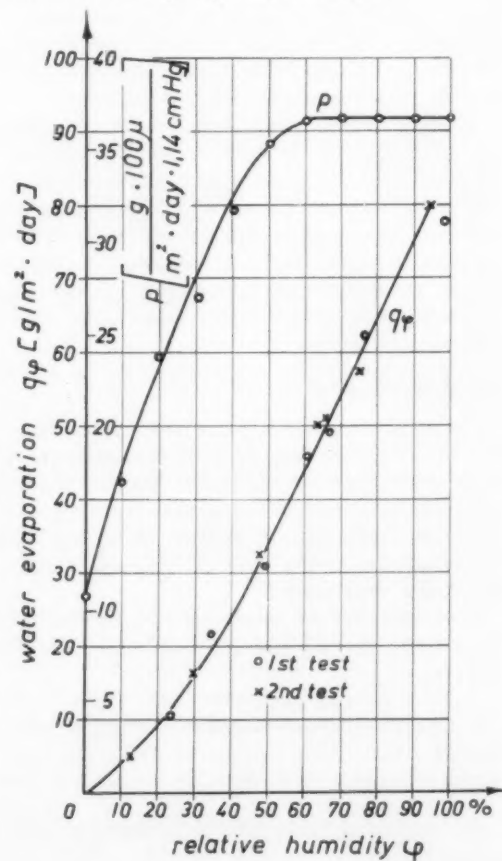
In addition to changes appearing at constant ambient conditions, there are to be considered those caused by temperature or humidity fluctuations entailing condensation (or sublimation) at the inner surface of the package in case of decreasing temperatures and condensation at the contents in case of increasing temperatures. The effects are determined by the sorption behavior, the sensitivity and the heat capacity of the contents on the one hand and, on the other hand, by the water-vapor permeability and the heat-transfer coefficient of the package. Even the air pockets within the package and the sorption capacity of cushioning materials in the package play their part. Although in general the sorption isotherm with its initial and final point is the most important factor, with some products an additional effect comes into play: the formation of hard lumps with high diffusion resistance during the wetting and redrying processes. This effect is dependent not only on the particle-size distribution and on hysteresis effects but, in the case of crystals, also on the fact that big and small crystals dissolve at different rates and that the melt may crystallize with absorption of crystal water.

It is frequently demanded that packaged goods be able to breathe. A few simple considerations will

show where this is necessary. Aside from goods subject to metabolic processes, such as fresh produce and natural cheeses, the ability to breathe is required wherever the equilibrium humidity is close to the critical relative humidity, as exemplified by flour of the usual moisture content. Any quick increase in the ambient temperature may cause the critical humidity to be exceeded at the surface of the material. When packed in a water-vapor-permeable container, this moisture increase will be adjusted much faster than with a non-permeable package. A passing increase in the ambient humidity endangers products contained in a water-vaporproof package considerably less than when they are enclosed in a permeable package, at least when the humidity changes occur in short time intervals. Products contained in an impermeable package are also endangered by trapped air, comparatively low diffusion coefficients and the presence of any slow deteriorating influence, as one of a microbiological nature.

To get an idea of the moisture sensitivity of important products, the sorption isotherms of some

Figure 3. Water-vapor permeation through plasticized PVC (polyvinyl chloride) film, thickness 56 microns. Upper curve (P) indicates permeation coefficient. Lower curve indicates WVP in g/m^2 per day at 20 deg. C.



40-odd goods were determined and all critical points marked (Figs. 1 and 2). Table I lists a few results of our investigations.

Now, which products are greatly affected by humidity changes? First of all, those products which are deteriorated by a slight increase of moisture; i.e., where the initial moisture (X_1) and the permissible moisture (X_p) differ only slightly, especially at low equilibrium humidities. The steepness or flatness of the sorption isotherm is of special interest in this respect. Thus it is explained why fructose (Fig. 1) or dry milk is especially affected by humidity changes; here X_1 and X_p lie close together at low relative humidities.

The package

1. *Packaging materials and their seams.* First of all there is required a definition of the amount Q of water vapor permeating a packaging material or a package.

$$\text{We have } Q = P A \frac{\Delta p}{\Delta X}$$

where Q = weight of water vapor permeating the material within unit of time

$$q = \frac{Q}{A} = \text{weight of water vapor per time and surface unit,}$$

A = total surface,

ΔX = layer thickness,

Δp = partial pressure difference of water vapor,

q is expressed on the basis of a relative humidity (φ) of 65 against 0 at 68 deg. F. ($\Delta p = 1.14$ cm. Hg.)

In cases where it is possible to define the thickness of the sample, it is preferable to measure the permeation coefficient

$$P \text{ in } \frac{g (100 \mu)}{m^2 \cdot 24 \text{ hrs.} \cdot (1.14 \text{ cm. Hg.)}} \text{ units}$$

which gives

$$q \left[\frac{g}{m^2 \cdot 24 \text{ hrs.}} \right] \cdot \Delta x (100 \mu) =$$

$$P \left[\frac{g (100 \mu)}{m^2 \cdot 24 \text{ hrs.} \cdot (1.14 \text{ cm. Hg.)}} \right] \cdot \Delta p (1.14 \text{ cm. Hg.).}$$

The permeation coefficient need not be independent of the water-vapor partial pressure, especially not for hydrophilic packaging materials, where

$$\frac{dq}{dp} = \frac{1}{\Delta x} \cdot P(p)$$

In determining the rate of water-vapor permea-

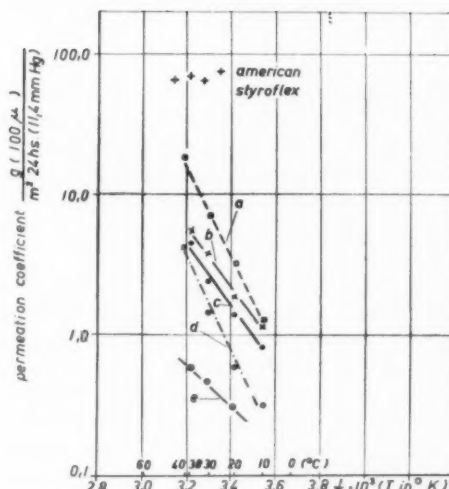


Figure 4. Temperature characteristics of WVP of four German plastic films: (a) polyamide, (b) non-plasticized PVC, (c) polyester, (d) polyethylene, (e) copolymer of vinyl chloride and vinylidene chloride.

tion at variable pressure against that at zero partial pressure, the curve $q = f(p)$ is obtained. The tangent at this curve multiplied by ΔX is equivalent to the permeation coefficient at the water-vapor partial pressure p .

With PVC films containing plasticizers and with lacquered cellophane, P was shown to be greatly dependent on the relative humidity (Fig. 3).

It is possible to measure the extent in which the water-vapor permeation depends on the ambient humidity by the quotient

$$e_{\varphi'/\varphi} = q(\varphi'/\varphi) / (\varphi' - \varphi)$$

For different packaging materials there was determined the value of the quotient of e for $\varphi' = 65$ against $\varphi = 0$ and of $\varphi' = 90$ against $\varphi = 0$ which, in the ideal case, is supposed to be 1 after a sufficiently long equalization period. Indeed, values between 0.97 and 0.2 have been found. The lower values have been found with coated papers where fibres penetrated the coating and acted as wicks, or where the layer was not closed or was porous. The

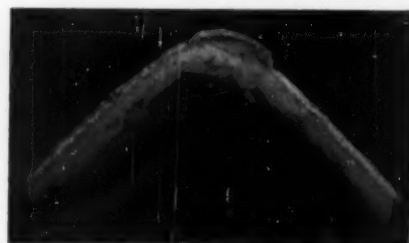


Figure 5. Creasing of aluminum foil laminated to kraft paper; foil lacquered on the outside.

so-called directional effect, according to which papers coated on one side only show differences in water-vapor permeability, depending on which side—the hydrophobic coat or the paper—is turned towards the humid part, must be mentioned in this respect. The relation between the permeation and the temperature was calculated on the basis of Augustin's formula and a relation found by Barrer for several plastics. It may be concluded from Fig. 4 that the recommended use of a packaging material is only valid for a definite temperature range; at higher or lower temperatures another packaging material may be better. In Fig. 4, aluminum foil will be missed. Here the extent of diffusion depends on the amount of pinholes. As the diffusion coefficient is proportional to absolute temperature, the inclination in Fig. 4 would be weak; therefore, the use of aluminum foil with less pinholes, at high storage temperatures, offers particular advantages.

In order to determine the water-vapor permeation of closed packages, they were filled with dried silica gel and exposed to an air current of 2.5 m./sec. velocity at 68 deg. F. and $\phi = 65\%$. The increase in weight was determined as a function of the time. This method is approximately 10 times as exact as the currently practiced PATRA dish method.

2. *Water-vapor transfer through closed packages.* The simplest packing device is the *flat bag*. Tests

Table 1: Maximum permissible equilibrium moisture of unpackaged products at 68 deg. F.

	%		%
Baking soda	45	Dehydrated meat	72
Crackers	43	Dehydrated vegetables:	
Dried eggs	30	Peas	25-45
Gelatin	43-45	Beans	8-12
Hard candies	(25-) 30	Spinach	28
Chocolate, plain	73	Savoy cabbage	30-40
Chocolate, milk	68	Domestic cabbage	20-30
Potato flakes	11	Tomatoes	20
Flour	65	Carrots	43
Oatmeal	(12-) 25	Onions	35
Dried skim milk	30	Dried fruits:	
Dry milk	(20-) 30	Apples	70
Beef-tea granules	35	Apricots	65
Dried soups	60	Dates	60
Roast coffee	(10-) 30	Peaches	70
Soluble coffee	45	Pears	65
Starch	60	Plums	60
Wheat preparations	60	Orange powder	10
(macaroni, noodles,		Cigarettes	57-59
spaghetti, vermicelli)		Cigars	(53-) 60
Sugars:			
Pure fructose	63		
Pure dextrose	89		
Purest sucrose	85		
Maltose	92		
Sorbitol	55-65		

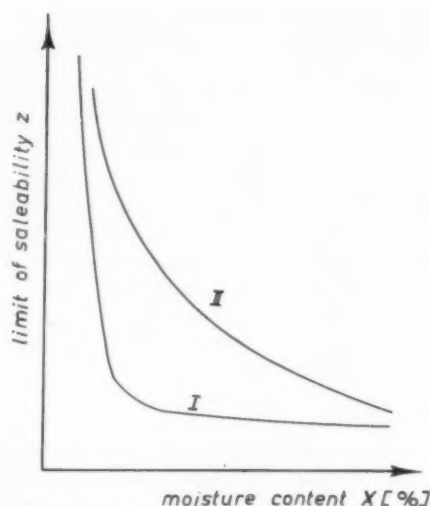


Figure 6. Shelf life depending on moisture where (I) product does not deteriorate beyond critical moisture point and (II) keeping quality decreases continuously with increasing moisture content.

showed that the water-vapor permeation through flat bags manufactured by machines from a paper-faced aluminum foil depends on the number of pinholes appearing during the process and on the passage through the seam overlappings. Owing to the simple manufacturing process, the second effect is much greater than the first one. It is thus of interest to find the factors influencing the water-vapor permeation through gummed parallel seams.

Tests made with aluminum foil laminated to paper showed that it is not necessary to use a specially water-vaportight adhesive; it suffices if the adhesive penetrates deeply into the pores of the paper and fills them. The paper should be as thin as feasible. With paper of 80 to 120 gs. per m.² (two sheets gummed together on the paper side) a water-vapor permeation of 1.2 to 1.4 mgs./cm. and 24 hrs. was observed. The penetration depths of adhesives in identical paper thicknesses increased in the following order: undiluted Acronal¹ (lowest value), diluted Acronal, dextrin, special adhesive A 22 ED of Henkel & Cie.

To minimize water-vapor permeation it is recommended that the coated side of one aluminum foil be sealed directly to the coated side of the other foil, giving preference to hot-sealing lacquers. This must be specially observed for the bellow seams of square bags. In this way seals are obtained with permeation figures as low as 0.03 to 0.06 mgs./cm./24 hrs. Slightly inferior values of about 0.1 mgs./cm./24 hrs. are obtained when gluing together thin

¹Brand name of a polymethacrylate adhesive.

paper sheets which have been wax laminated to aluminum foil.

For a closure made with an adhesive we get the relation

$$Q_{\text{total}} = \frac{l \cdot h \cdot P_{\text{total}}}{T}$$

where

$$P_{\text{total}} = 0.52 \cdot 10^5 \left[\frac{g (100 \mu)}{\text{m}^2 \cdot 24 \text{ hrs.} \cdot (1.14 \text{ cm. Hg.)}} \right]$$

is the coefficient of permeation through all seals (disregarding the adhesive blobs at the ends).

For the ungummed closure we have

$$Q_{\text{total}} = \frac{l \cdot h \cdot P_{\text{air}}}{T}$$

where

$$P_{\text{air}} = 2.9 \cdot 10^5 \left[\frac{g (100 \mu)}{\text{m}^2 \cdot 24 \text{ hrs.} \cdot (1.14 \text{ cm. Hg.)}} \right]$$

and

$$\begin{aligned} h &= \text{gap of closure} \\ l &= \text{length of closure} \\ T &= \text{width of closure} \end{aligned}$$

A closure made by rolling has a rather unsatisfactory water-vaportightness. A further unsatisfactory effect is the gap diffusion appearing in cases where the number of layers is not constant along the cross-section. With a rigid pressing mechanism, the closing pressure will not be uniform. Where only a few layers are superimposed, which is the case in the middle of the opening of a gusset bag, the material will not be in proper contact and therefore will also not seal properly. Sealing with a silicone rubber may help somewhat, but its use on moistureproof cellophane causes a higher water-vapor permeation. Teflon, on the other hand, grows less elastic. The seal may be improved by stepping the sealing iron where four layers are followed by two layers. But this necessitates an exact control of the sealing process. At such spots it seems best to apply a thick layer of a suitable melted thermoplastic material and then compress.

A further cause for poor water-vaportightness—not a rare occurrence even with flat bags—is a poorly made seal. Frequently it may be observed that the contact of the heat bars does not reach quite to the edges, or the bars are not clean and are not placed in a way that would allow them to remain exactly parallel, even at high temperatures; that the sealing optimum is not obtained and that the adhesive is not applied at the corners or is insufficiently wetted. Such manufacturing faults are unimportant

as long as the bags serve only for transportation, but for vaportight bags it is an entirely different matter.

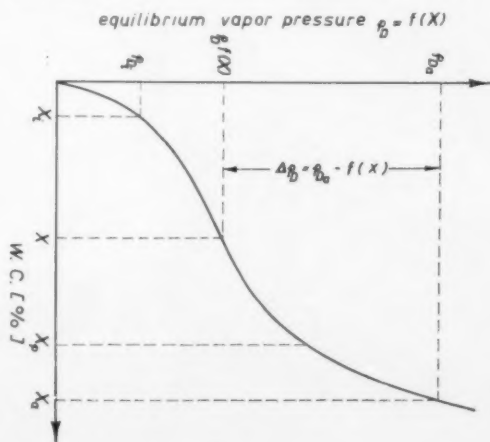
Practically the opposite of the laminated aluminum foil, which can be absolutely water-vaportight, is lacquered, moistureproof cellophane. Here the body itself is water-vapor permeable and the coating must not only make the closure but also effect water-vaportightness of the entire surface. The surface permeation q plays a more important role than with aluminum foil. In this respect the influence of the lacquer formula and the sealing procedure must be considered. Contrary to present practice, more attention must be paid to the fact that the heat-sealing procedure must go on at optimum temperature and time and at constant pressure. Temperature and pressure should be measured and controlled.

Special care must be exercised in the packing of moisture-sensitive powdered goods, because a sizable increase in the water-vapor permeability may occur, the probable cause being electrostatic charging of the packaging material. Another difficulty is how to avoid powder in the sealing area. The seam-permeation values of MSAT cellophane lie between 0.17 and 0.28 mg. per cm. and 24 hrs.

3. *Behavior of creases.* The data given permit the calculation of the water-vapor permeability of flat bags, whereas that of square bags presents certain difficulties for two reasons: (1) the water-vapor permeation across the closure is, for reasons already mentioned, less clearly defined and (2) during the manufacture, heavy creasing stresses appear which may lead to tears or cracks.

Both causes have been investigated theoretically. No special angular effects were found at the folded seams of the bottom (i.e., no more water-vapor diffusion than might be expected for geometrical reasons). The fact of the overlapping width increasing with the seam length may serve to explain only a

Figure 7. Water-vapor pressure above a product subjected to an ambient P_{Da} where (i) represents the initial state and (p) represents the permissible limit.



small part of the difference between the permeabilities of flat and square bags.

A bigger problem is the prevention of damage to the packaging material during the processing. The first investigation in this respect concerned the amount of water vapor which passes through pinholes where the length is small compared with its diameter. This amount depends on several factors, mainly on the velocity of the ambient air and on the distance of the goods from the container wall. On the average, the amount of water vapor is about proportional to the pinhole diameter. Assuming the water-vapor permeation of a pinhole of 1-mm. diameter in a material of 10-microns thickness to be about 10 mg. per 24 hrs., 24 pinholes of only 50-microns diameter would be required to produce the same effect. One hole of 1-mm. diameter per 100 sq. cm. surface would be sufficient to double the water-vapor permeation of a plastic film with a permeation of 1 g. per sq.m. per 24 hrs.

The next problem to be considered was the pinhole size distribution in the water-vaportight packaging material appearing during the processing. Since there are so many different types of machines, the materials were tested for permeation after being creased in a well-defined way. The experiments showed that papers coated with polyethylene or polyvinylidene copolymer dispersions were practically unaffected by creasing, whereas the opposite was found with waxed papers. Waxed papers show an especially high increase in water-vapor permeation after being creased, which proves that the loosened fibres act like wicks. Aluminum foil laminated to thicker paper shows increased permeation after creasing when the aluminum is on the outside. Apparently the yield point of the foil is exceeded in the creasing process (Fig. 5). Wax-laminated foils are less sensitive to creasing than those lami-

nated with dextrans (0.03 to 0.04 as against 0.1 to 0.3 mg./cm. in 24 hrs.). It is inadvisable to subject packaging materials to heavier creasing stresses than required to obtain the necessary creasing angle.

With aluminum foils laminated to paper by the aid of heat-sealing substances such as lacquers or hot melts, there is the least danger of porous cracks appearing when the plastic water-vaportight coat is laid onto the aluminum side and when the thin paper sheet and the adhesive layer are not too stiff and when the aluminum foil is placed on the outside (the paper is compressed). Specially favorable results which have been obtained with aluminum foil coated with polyethylene are due to the advantageous strain-stress curve of polyethylene and to its low water-vapor permeation coefficient.

In developing water-vaportight packages, more attention will have to be paid to the strain-stress behavior of the coating substances, i.e., the melts, dispersions and lacquers. In all probability the heat sealing of closures for water-vaportight packages will be more favored in the future.

These experiments are valuable in computing the water-vapor permeability of a package. In other cases they may show where improvements in the construction of packages are indicated.

The packaged product

Two main cases have to be considered: first, the case where the moisture of the packaged product varies only with time and then the case where there exists a moisture gradient in the product. The second case applies when

$$P_{\text{package}} > 10^2 \text{ (up to } 10^3 \text{)} \\ \text{g (100 } \mu \text{)}$$

$$\text{m}^2 \cdot 24 \text{ hrs.} \cdot (1.14 \text{ cm. Hg.)}$$

i.e., in cases where high- [Continued on page 172]

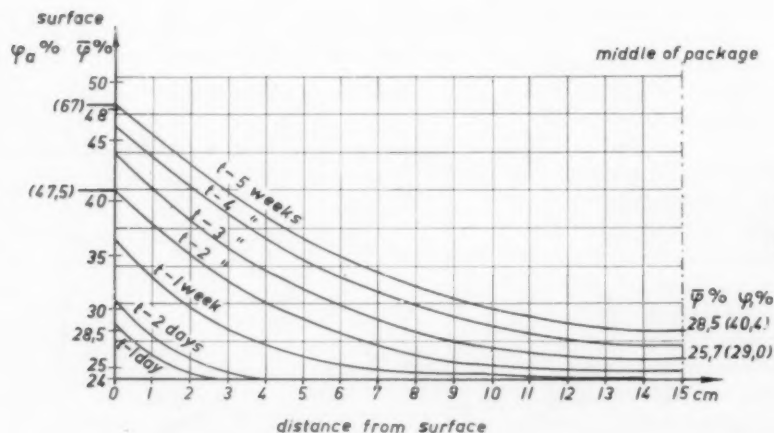


Figure 8. Moisture change of dry milk packed in wax-laminated duplex paper.

Indications for carton overwraps

Studies show that coated or laminated cartons, wrapperless but sealed, can retain moisture in frozen foods about as well as overwrapped waxed cartons

*By Marian G. Klein**

The fairly recent emphasis on the wrapperless, linerless sealed carton is undoubtedly due to the giant strides of the equipment suppliers. During the past year, eight equipment suppliers have announced the development of cartoning equipment for sealing linerless, waxed cartons with adhesives. Other suppliers are currently working on heat-seal equipment for polyethylene-coated cartons. In addition to machine developments, improvements in adhesives, printing inks and cartonboard all have contributed to make it possible to seal dry or waxed cartons by mechanical methods.

One of the first uses for this sealed, waxed carton has been in the frozen-food industry. Here, as in other industries, the main advantage is cost saving by elimination of the overwrap and overpackaging.

Some industry authorities are of the opinion that this is a trend which may develop into an industry landslide. Others eye wrapperless cartons cautiously—from both a protective and a cost standpoint. They point out that some food products require a high level of moisture protection and the carton

overwrap combination may be the most economical way of obtaining this high level of protection.

To date no test data have been published as to the actual protective properties of sealed, waxed cartons, although two recent articles have described applications of the new wrapperless, linerless cartons (1, 2).¹ However, extensive research on this problem is being conducted by both carton suppliers and food packers.

As early as 1953 Marathon began a series of tests on frozen meat pies which were packaged in waxed, linerless cartons without overwrap. Since that time additional packaging and storage tests have been conducted with other frozen-food products. These products included such diverse items as frozen peas, French-fried potatoes, fish sticks, turkey dinners and fruit pies, as well as macaroni-and-cheese dinners. Some of these products were pre-packed in an aluminum dish or tray prior to cartoning, whereas other products were packed directly in the carton. The purpose of these studies was to determine the level of moisture protection provided by: (a) overwrapped and non-overwrapped waxed cartons, (b)

*Package Materials Section, Research & Development Div., Marathon, a Div. of American Can Co., Menasha, Wis.

¹ Numbers in parentheses identify References appended.

Figure 1. Cold-room storage was used to compare performance of wrapped and wrapperless frozen-food cartons. Here, the author records weight losses of wrapperless cartons at temperature of 0 deg. F.



Table I: Weight loss of frozen foods in various waxed solid bleached cartons

Product	Level of cartoning protection required	Method of packaging	Carton style	Package weight loss, %, six months at 0° F.	
				No overwrap	Tyton* waxed paper overwrap
Chicken pies	Low	In aluminum dish	Marapak, lock end	0.0	0.0
Blueberry pies	Low	In aluminum dish	Marapak, lock end	0.4	0.3
Turkey dinner	Low	In aluminum dish	Kliklok	0.4	0.0
Macaroni-cheese casserole dinner	Moderate	In aluminum dish	Marapak, lock end	6	4
Peas	High	Direct in carton	Marapak, lock end	9	0.5
Fish sticks	High	Direct in carton	Kliklok	17	6
French-fried potatoes	High	Direct in carton	Kliklok	16	3

*Marathon's trade name for a frozen-food overwrap consisting of 30-lb. opaque paper waxed to 44-lb. gauge with a special blend of waxes.

various types of end seals on waxed cartons and (c) various types of carton stock without overwrap.

With many frozen foods, the major problem during storage is moisture loss of the product. Some frozen-food packers are not aware of the weight loss of their products due to dehydration in the warehouse and retail cabinets. A number of packers in various localities have been penalized because the weight of the product taken from the retail cabinet fell under the weight stated on the package. Dehydration is almost always due to faulty packaging. It results in a discolored, pithy, dry product which may be tough in texture and lacking in flavor.

Test procedure

In carrying out our tests, the various food products were packaged under commercial conditions using the test cartons. The packages were then sharp frozen at the food-packer's plant and shipped in dry ice to the Marathon Package Materials Laboratory where they were stored in a walk-in freezer maintained at 0 deg. F. The individual packages, removed from the corrugated shipping cases, were arranged on wire racks with complete circulation on all sides of each package. After a three-day conditioning period at 0 deg. F., all packages were weighed to 0.1 gm. to determine the initial package weight. The weighings were made inside the zero room. Thereafter the packages were reweighed and a number of packages for each type of product and each style of carton were removed from test after three, six,

and nine months' storage. The package weight loss was determined, the carton opened and amount of product desiccation observed. The food was then prepared for taste tests. Observations of color, taste and texture were recorded by the taste panel.

These long-term packaging studies have revealed some interesting data.

Table I shows the package weight loss of various products in waxed solid bleached cartons, with and without a conventional type of waxed-paper overwrap, after six months' storage at 0 deg. F. These data show that certain products, such as meat pies, fruit pies and dinners, which are packed in aluminum dishes and covered with a top crust of dough (as in the case of pies) or with a sheet of heavy-gauge aluminum foil (as in the case of dinners) do not require an overwrap for protection. A waxed carton with either lock-end, tuck-end, thermoseal or glue seal provides all the protection that is needed. In this case the carton provides the mechanical protection and the covered aluminum dish or tray provides the necessary protection against moisture loss.

On the other hand, precooked macaroni casserole dinners, packed in an aluminum dish without a protective lid, showed fairly high weight losses at six months and desiccation of the top surface of the product at only three months' storage. It appears that these products require somewhat more moisture protection than a wrapperless waxed carton.

Other items were more seriously affected. Frozen peas, fish sticks and French-fried potatoes showed extremely high weight losses in waxed cartons with-

Table II: Effect of end closure on weight loss of frozen peas in waxed cartons

Type of cartonboard	Style of carton	Carton end closure	Package weight loss, %, after storage at 0° F.		
			3 mo.	6 mo.	9 mo.
Glamakote* waxed, solid bleached board	Marapak	Heat sealed bellows end	3	4	8
Glamakote waxed, solid bleached board	Marapak	Heat sealed full end flap	4	8	11
Glamakote waxed, solid bleached board	Marapak	Mechanically locked ends then heat sealed over locked ends	4	9	12
Current package: waxed carton with Tyton waxed-paper-overwrap	Marapak	Mechanically locked ends on carton. Heat-sealed ends on overwrap	0.3	0.6	0.8

*Marathon's trade name for a frozen-food carton with a very smooth, extra glossy, scuff-resistant wax finish.



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Table III: Weight loss of frozen foods in various types of cartons, including coated and laminated boards

Product	Type of carton-board*	Carton style	Package weight loss, % , nine months storage at 0° F.	
			No overwrap	Tyton† waxed-paper overwrap
Macaroni-cheese dinner (in aluminum dish)	Wax-coated board	Marapak, lock end	10	4
	Poly-coated board	Marapak, glued end	0.0	—
Peas (direct in carton)	Wax-coated board	Marapak, lock end	12	0.7
	Poly-coated board	Marapak, lock end	1	—
	Poly-coated board	Marapak, heat-sealed bellows end	0.4	—
Haddock fillets (direct in carton)	Wax-coated board	No. 5 style top opening, one-piece telescope style, glued carton	11	0.3
	Paper laminated to board	"	1	—
	Cellophane laminated to board	"	0.6	—
Raw cut-up frying chicken (direct in carton)	Wax-coated board	"	15	0.3
	Paper laminated to board	"	1	—
Ground beef steaks (direct in carton)	Wax-coated board	Marapak, glued ends	7	2
	Poly-coated board	Marapak, glued ends	0.3	—
	Poly-coated board	Kliklok	1	—

*The polyethylene coating, cellophane lamination and paper lamination were toward the food product.

†Marathon's trade name for a frozen-food overwrap consisting of 30-lb. opaque paper waxed to 44-lb. gauge with a special blend of waxes.

out overwrap. Even with an overwrap the fish sticks and French fries showed fairly high weight losses. Apparently, items of this type require much more moisture protection than the waxed carton alone.

Experimental

At this point, thought was given to the protective properties of various types of end closures on waxed cartons. Was it not possible that much or all of the moisture loss took place through the ends of the cartons rather than through the board itself? Additional storage tests with frozen peas were conducted to study this problem. Table II shows the results of these tests. The data indicate that the type of end closure used on the container has an effect on the protectiveness provided by a waxed carton.

However, even with the best closure, the waxed carton did not provide much moisture protection. The package weight loss of the sealed, waxed cartons was very high—8 to 12%. This indicates that the major portion of the moisture loss took place through the board itself. When these figures for the sealed carton are compared with the weight loss of the current overwrapped package, which showed less than 1% package weight loss under the same test conditions and storage time, it is obvious that even a completely sealed waxed carton does not alone provide sufficient protection for the moisture-sensitive class of frozen foods.

The next step was to find a carton material which would provide adequate protection for food items that require a medium to high level of moisture protection. Additional tests were set up using cartons fabricated of highly protective materials, such as one-side-polyethylene-coated board (1 mil polyethylene on the inside of the carton) and wax-laminated boards. Wax-coated cartons were included in the tests for control purposes. Results of these tests are shown in Table III.

The figures in this table show that the polyethylene-coated cartons and the laminated cartons were vastly superior to the waxed cartons from a weight-loss standpoint. With a wrapperless, sealed, polyethylene-coated carton, the level of moisture protection was equal to, or better than, that provided by an overwrapped waxed carton.

As is evident from these studies, there is no single, all-purpose container which can be used for packaging all types of frozen foods. The protectiveness of the container must be tailored to the protective requirements of the individual food product as shown in the following summary:

Level of cartoning protection required by product	Package required
Low	Wrapperless, waxed carton
High	(1) Overwrapped carton (2) Wrapperless, sealed polyethylene-coated carton or (3) Wrapperless sealed laminated carton

From this it can be seen that the wrapperless, linerless, waxed carton cannot be used indiscriminately for packaging all types of frozen foods. Certain ones require a higher level of moisture protection. Now, more than ever, caution must be exercised in selecting proper packaging materials to maintain quality and proper weight of frozen foods.

References

1. Anon., "Wrapless, Linerless Cartons," MODERN PACKAGING 30, No. 12: 92-93, 195 (Aug., 1957).
2. Anon., "Tear-Strip Carton for Frozen Food," MODERN PACKAGING 31, No. 7: 168-169 (March, 1958).



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Polyethylene-coated kraft bag

Q: *We formerly used a duplex paper bag for a 2-lb. package of one of our granular animal feeds. This was an all-kraft bag and gave good service. Some time ago we decided to improve this package and adopted a polyethylene-coated, bleached-kraft bag. The new bag gave a better appearance, as well as good protection to the product. However, we have had many complaints and losses from broken bags. We have tried using a heavier paper, but this has not entirely stopped the breakage problem. We find that use of the polyethylene-coated paper also tends to affect the packing operation. The breakage always seems to occur in the bag wall.*

We were of the opinion that the polyethylene coating and heat-sealed construction would make a stronger bag than the duplex paper.

Can you tell us why this happens and what we can do to prevent our problem of bag breakage?

A: It is apparent that the breakage of the wall of the polyethylene-coated kraft bag is due to dropping or to rough handling. A free-flowing product will exert sudden and severe forces on the bottom portion of a bag that has been dropped from a moderate height.

Your original duplex bag had two independent plies of kraft paper and these apparently had enough total strength to prevent breakage in typical rough handling or from a moderate drop height. The new bag of kraft coated with polyethylene is lacking in the burst strength which is necessary to meet the same handling conditions.

You apparently assumed that the polyethylene coating would add to the strength of the kraft paper, but this is not the case. A polyethylene coating strongly adhered to the paper

gives little or no improvement in the resistance to a high-speed impact resulting from dropping the bag. The result is that you are, in effect, using a single-ply kraft-paper bag to contain this product.

A possible answer is to use a heavier coating of polyethylene and specify that it is to be lightly adhered to the kraft paper. Such a structure could add some of the strength of the coating to that of the paper and, perhaps, make a satisfactory single-ply bag. However, there are a number of different combinations of plastic film and paper that could be used.

It is suggested that you try a number of constructions and evaluate them by a 2-ft. drop test, using your original duplex kraft bag as a basis for comparison. By using the drop test, you can be sure that you will develop a new construction that will not break in rough handling.

Change in gas permeability

Q: *One of our new products is a roasted, porous and granular solid that is affected by both moisture and air. We have decided to use a flexible package that can be gas packed. Our laboratory has a unit for vacuumizing, gas filling and sealing, and we are using a package material and construction that has been successfully used for other oxygen-sensitive foods. We have made a number of sample packs and have tested them for oxygen content during storage. Our tests show that the oxygen content of the packages is very low when the packages are sealed, but that it gradually increases for the first few days, then the oxygen content slowly reduces to almost zero.*

We cannot understand the increase of the oxygen value, since the packages do not show any leakage. Is it possible that gas permeability

of the material changes with aging? If this is not the reason, can you tell us what does occur to cause this change in oxygen value?

A: There is no possibility of the gas-permeability value of your material changing appreciably over the period of your tests. You appear correct in assuming that there is no package leakage, since the oxygen content finally assumes and holds a value approaching zero.

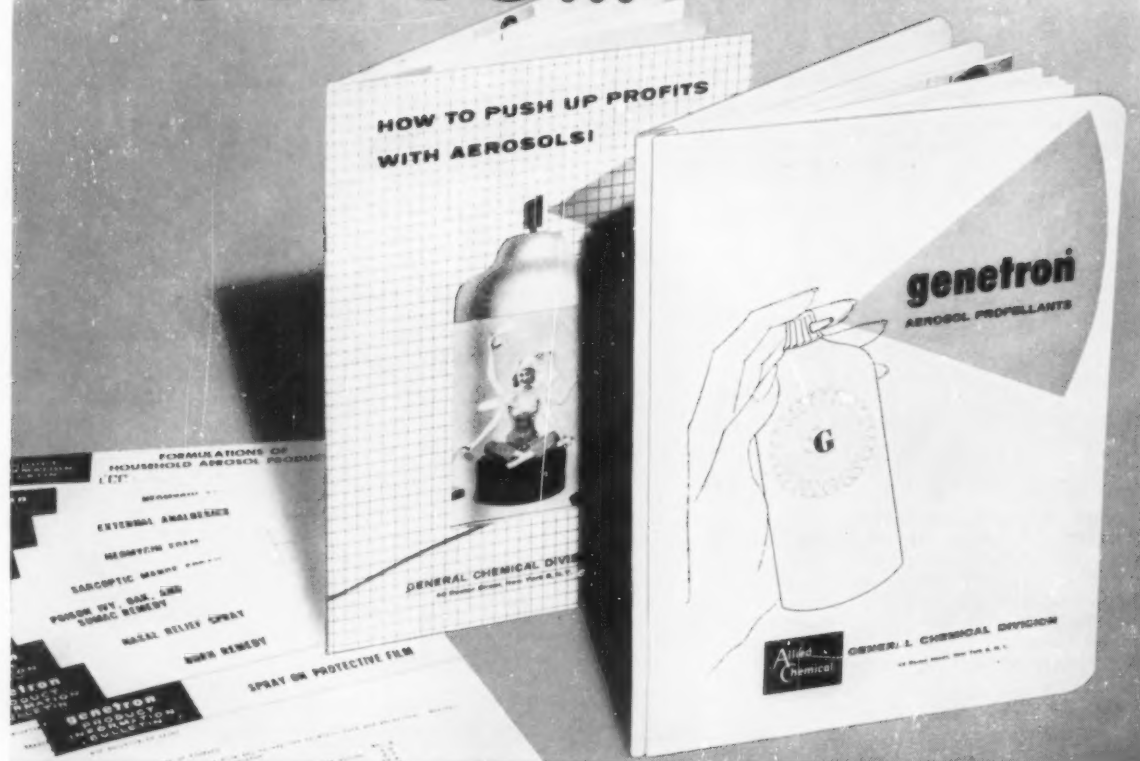
The only possible answer is that the oxygen increase in the first few days is due to the slow release of air from your product. An organic material that is porous and which has been strongly heated in a roasting process can develop a physical structure that can absorb relatively large amounts of air during its period of cooling and storage at room temperature. The air is strongly held in the interstices of the solid and is not completely removed in the short period of time the vacuum is applied to the package.

The result is that the remaining air diffuses into the gas-filled space in the package in the first few days after packing. The release of this entrapped air is the cause of the increase in the oxygen content of the package. After the entrapped air is entirely diffused out of the product, the oxygen value starts to decrease and it is slowly reacting chemically with the product.

This action can be prevented by taking the product directly from the roasting ovens into a cooling space blanketed with an inert gas. It would also be beneficial to hold the product in a vacuumized chamber for some time and release the vacuum with an inert gas just prior to the actual packing operation.

Either of these methods would result in a package with the lowest possible initial oxygen content.

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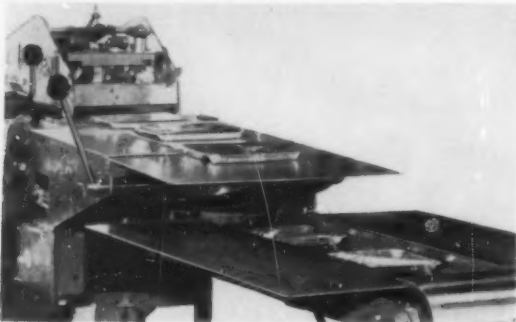
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Equipment and materials

Unit positions and crimps foil covers

An automatic tuckwrap machine for positioning and crimping aluminum-foil covers on frozen-food trays and a variety of other aluminum containers of various sizes and shapes is offered by Hayssen. Developed in cooperation with Reynolds Metals



Co., the Hayssen-Reycon Tuckwrap Machine, which operates from roll stock, is reported to require less foil in making package covers. The unit insures perfect crimping of foil around corners and can be converted quickly to accommodate any size of round or rectangular container, the company claims. Operating at a rated speed of 40 to 45 containers per minute, the machine is geared for straight-line or right-angle discharge. *Hayssen Mfg. Co., Sheboygan, Wis.*

New line of plastic food containers

A new line of sturdy copolymer plastic containers and lids for dairy, confectionery, meat, bakery and specialty-food packaging has been introduced by Continental Can. According to the company, its new "hi-impact crystal" series of containers offers great strength and flexibility combined with sparkling clarity, at low cost. Also available are opaque "hi-impact" lids for waxed paper tubs and opaque ½-gal. containers with polyethylene snap-on lids. The containers come in a variety of sizes and the lids are available in color. *Continental Can Co., Paper Container Div., 349 Oraton St., Newark 4.*

Granular and bottle-labeling adhesives

Hot-melt adhesives in granular form and a bottle-labeling adhesive have recently been introduced by National Starch. Because the granular hot-melt adhesives soften when heated and solidify when cooled, the company says, they are especially suited to bonding such impervious surfaces as aluminum foil and thermoplastic packaging films. Other cited advantages include ease of application, lower per-pound cost, adaptability to high production speeds and elimination of the need for pre-melt equipment.

The company's bottle-labeling adhesive, called Chemtite, is claimed to combine easy machinability, good gripping power, extended pot stability and lower unit production costs. A modified casein adhesive, it is also reported to be resistant to ice and water, suggesting its use by the food and pharmaceutical industries in labeling glass containers. *National Starch Products, Inc., 270 Madison Ave., New York 16.*

High-speed multiwall bag machine

Potdevin's Model 62XS Perforaster Tuber, designed for the production of stepped-end multiwall bags at reported speeds of up to 300 per minute, derives its name from the fact that each web is perforated and cross-pasted simultaneously in individual stations within two stacks. Requiring 10 by 90 ft. of floor space, the machine produces bags in sizes of from 10 to 26 in. wide and 20 to 54 in. long. It is equipped to handle up to six paper rolls, including one preprinted roll which forms the outer layer

of the multiwall tube. The innovation of a simultaneous perforating and cross-pasting operation is reported to simplify the problem of register, permit easier accessibility from floor level and eliminate the possibility of paste splash in high-speed production. *Potdevin Machine Co., Teterboro, N.J.*

Fast printing on roll label stock

Complete printing or accurately registered overprinting on roll-form labels and tape can be done at speeds of 70 to 100 per minute by its new 126AF machine, says Markem. An automatic feed checker reportedly assures perfect alignment of label stock during the printing operation. The unit will make imprints of up to 2 by 3 in. using rubber plates or typeholders. Short runs or frequent variable changes are practical because the type can be changed in a matter of seconds, the supplier claims. *Markem Machine Co., Keene, N.H.*

Vertical cartoner operates at 120 per minute

A new semi-automatic vertical cartoner with a rated speed of up to 120 cartons per minute is available from Bivans. Called the Vertuck 120, it produces cartons ranging in size from ¾-by-¾-by-2½ in. to 4-by-4-by-12 in. Carton blanks move from a hopper to a horizontal forming and bottom-closing unit, then are transferred to a vertical unit for filling and automatic closing. Crank-in features are reported to minimize set-screw adjustments and allow quick change-over. Easy loading is facilitated by the low carton hopper, the supplier points out. *Bivans Corp., 2431 Dallas St., Los Angeles 31.*

Coders for nesting-type cups

Two coding attachments for printing on nesting-type cup containers have been introduced by Anderson Bros. Both attachments will print



up to six characters. The company's Model 68 (shown) is a "no-lid-no-code" unit for printing on inset lids or coverall caps. A stainless-steel probing finger makes the device inoperative when a container is fed through the line without its cover. The company's second new coder, the Model 78, imprints the undersides of containers. It has interchangeable coding heads which reportedly can be changed in a matter of seconds without the need for tools or special equipment. *Anderson Bros. Mfg. Co., Rockford, Ill.*

High-gloss flexographic ink

Bensing Bros. & Deeney has introduced a high-gloss, high-color-strength flexographic ink for printing on flexible packaging materials. Called Speed-E-Brite, it offers up to 30% more area coverage per pound and provides uniformly excellent printing at speeds between 100 and 500 fpm, the supplier claims. Its other cited advantages include no foaming, better block resistance and high water resistance. *Bensing Bros. & Deeney Sales Co., 3301 Hunting Park Ave., Philadelphia 29.*

Purging oxygen from filled containers

Crown Cork & Seal's Crown 28 Rotary Purging Machine removes the oxygen from packaged granular products to protect the contents from oxidation and thereby extend shelf life. The unit drives air from the container by flooding it with an

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odorless, tasteless, inert gas which is introduced into the container by a tube. This tube, which is plunged to the bottom of the filled container, has numerous small holes which distribute the gas through the product (from the bottom up) at a uniform rate. When the purging tube is withdrawn, the container moves to an oxygen-free enclosed capping station for sealing in an atmosphere of inert gas. According to the supplier, its machine operates at a rate of 300 containers per minute and removes more than 99% of the oxygen from each container. *Crown Cork & Seal Co., 9300 Ashton Rd., Philadelphia 36.*

Polyethylene-film extrusion cuts waste

American Extrusion, a newly formed corporation, reports that it has begun production of a high-clarity, thin-gauge polyethylene film that derives superior strength properties from a more efficient method of extrusion. According to the company, the new process involves extruding tubular film via a method that affords an almost nonexistent waste factor. The film currently is being produced in gauges ranging from $\frac{3}{10}$ to $\frac{7}{10}$ mil. *American Extrusion Corp., Hightstown, N.J.*

Protective shipper bag for coffee

Shellmar-Betner's "Bulk-O-Tainer," an institutional-size shipper bag for coffee, is fabricated of kraft paper lined with rubber hydrochloride film and heat sealed to help maintain product freshness during storage. The film lining on the shipper bag, which holds a dozen 1-lb. bags of coffee, cuts costs by eliminating the need for protective linings in the individual bags, the supplier says. The bags can be re-used as storage containers. *Continental Can Co., Shellmar-Betner Div., Mt. Vernon, O.*

High-speed carton-bottom stapler

A continuous coil of copper-coated staples enables its new motor-driven Golden Belt carton bottomer to drive 4,000 staples without reloading, says Bostitch. The foot-operated unit also



is claimed to attain speeds of up to 190 staples per minute and to eliminate 75% of usual staple-reloading time. Each push of the operating lever drives one staple, simultaneously forming another

from the coil of partially formed and cohered staples located on top of the machine. A box-flap lifter on the post head (left) permits bottoming cartons of up to 24-in. length without the need for stopping to reverse the box, according to the supplier. *Bostitch, Inc., East Greenwich, R.I.*

Two new film-testing devices

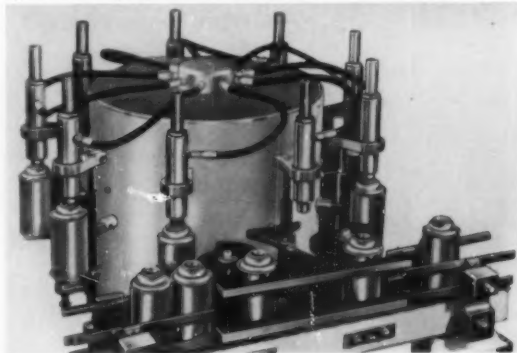
American Viscose Corp. has licensed F. F. Slocumb Corp. as the manufacturer of its two new devices for testing packaging films. The Avisco Pliability Tester works on the principle that film stretch has a direct relation to its moisture content. A strip of the film to be tested is fixed to one end of a lever and a known weight is applied to the other end. As the film stretches, its elongation is automatically recorded at predetermined time intervals. The weight can be adjusted for various film gauges and the timer can be set for different dwell periods. The Avisco Flex Tester is claimed to eliminate error in testing the flexibility of moisture-containing films. The sample film is inserted between the jaws of the device, which then move on a parallel plane but in opposite directions. A counter records the number of flexes before breakage occurs. *F. F. Slocumb Corp., 14th & Poplar Sts., Wilmington, Del.*

New linerboard ends scoreline cracking

Westvaco has begun commercial production of a 90-lb. linerboard that is reported to eliminate scoreline cracking in heavy-duty shipping containers. The board's resistance to cracking stems from the use of an unbleached kraft grade of Clupak stretchable paper as an outside lamination. (See *MODERN PACKAGING*, March, 1958, p. 159 and p. 220.) The base sheet is standard unbleached linerboard. To be marketed as Kraftman Clupak Laminated Liner (at no price increase over regular 90-lb. test liner), the material is being used in the manufacture of both corrugated and solid fibre containers. *West Virginia Pulp & Paper Co., 230 Park Ave., New York 17.*

High-speed rotary pressure fillers

A new series of Colton-Alpha production-line rotary pressure fillers that fill aerosol containers with several different types of liquid propellant at reported speeds of up to 200 cans per minute is available from Arthur Colton Co. Units in the company's No. 1651 line accommodate butane and propane straight hydrocarbon propellents as well as fluorinated hydrocarbon



types. After product-filling, valve-insertion and valve-crimping operations, the propellant is fed into the containers through the filling heads under 500-600 p.s.i. pressure. This method, the company says, assures that the propellant will remain in its liquid state without the use of additional refrigeration units. Available with a variety of filling heads (the model shown has nine), the machines are adjustable to handle containers ranging from 3- to 16-oz. capacity. In operation, containers are removed from the conveyor line by a star index wheel and placed on supports attached to the rotary head. Filling nozzles are lowered to contact the containers, which are then filled with propellant as they travel around with the rotary head. After filling, the cans are placed back on the line by another star wheel for further packaging operations. *Arthur Colton Co., 3400 E. Lafayette Ave., Detroit 7.*

Feeder for small parts

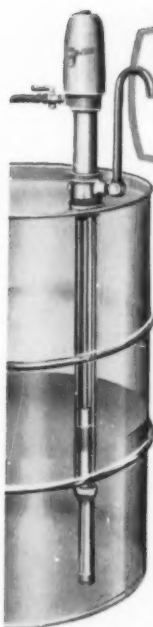
Reported to be suitable for packaging small parts in limited quantities is Illinois Tool Works' new open-type oscillating hopper. The unit, which accommodates screws, rivets and other small items, can be set to deliver a preselected quantity of parts at a rated speed of 125 pieces per minute. *Illinois Tool Works, Power Tools Div., 2501 N. Keeler Ave., Chicago 39.*

Thin-wall tube and can printer

Available from Industrial Marking Equipment is a new machine for marking, dating and coding thin-wall tubes and cans without denting or otherwise damaging their surfaces. The printer reportedly can handle any open-type metal or plastic container that will fit interchangeable mandrels of from $1\frac{1}{4}$ - to 6-in. diameter. The machine prints direct impressions from rubber type and features an aniline system for accuracy, legibility and convenience, the company says. It can be made to cycle automatically if required. *Industrial Marking Equipment Co., 655 Berriman St., Brooklyn 8.*

Speedy ampoule filler and sealer

Filling speeds of 40 to 90 per minute are claimed for Autopack's new ampoule-filling and sealing machine. In automatic operation, ampoules are fed two at a time from a magazine to



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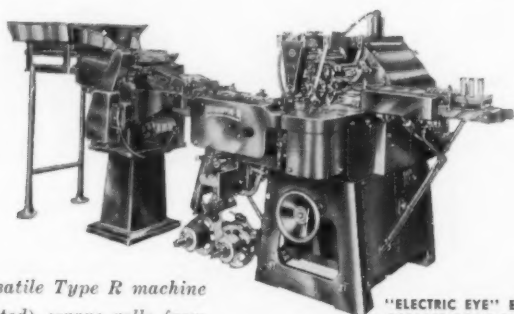
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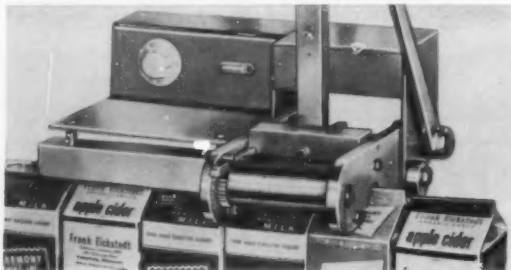
the gassing, filling and burner-sealing stations, after which they are lifted and stacked on a removal tray. The table-mounted unit includes a variety of precision syringes in glass or stainless steel, filling needles and burners suitable for handling a wide range of gases. Built-in controls eliminate machine overloading and needle drip, the supplier says. *Autopack, Ltd., Caroline St., Birmingham 3, England.*

Easy-opening end label for bread wrap

Marathon's new "Easy Strip" end label for bread wraps is perforated and strip coated to offer consumers more convenient opening. The vertically perforated center strip, which has no adhesive backing, is torn downward to expose the folds on the end of the bread wrap. In addition to easier opening, the new even-opening end label permits complete reclosure of the wrap after first use, the company says. Red-white-and-yellow stock labels, designed to introduce and merchandise the strip-opening feature, are available from the supplier. *Marathon, div. American Can Co., Menasha, Wis.*

Simultaneous carton sealer and stapler

Designed for use by small- and medium-sized packagers of liquid foods in paraffined cartons, American Machine Works' new simultaneous carton sealer and stapler is reported to ac-



commodate up to 350 1/2-gal. cartons per hour. The manually operated unit is immediately adjustable to handle cartons ranging in capacity from 1/2 pint to 1/2 gal., and its carton-preheating element is thermostatically controlled for accurate performance at peak production loads, according to the supplier. *American Machine Works, Inc., Racine, Wis.*

High-capacity vibratory feeder

Eriez Mfg. has added a new vibratory feeder, with a rated capacity of 10 tons per hour, to its line of HI-VI feeders. The unit is designed to handle medium-to-heavy feeding to batch-weighing scale hoppers, processing mills, belt conveyors and other units in which accurate control is required, the company says. Designated the V3B-50A HI-VI, the feeder is claimed to have a long service life and to offer economy of operation. Its spring system is made of glass fibre reinforced epoxy laminate, which results in dynamic operation as well as durability in plant operation, the supplier claims. Seven types of feeder trays are available. *Eriez Mfg. Co., Erie, Pa.*

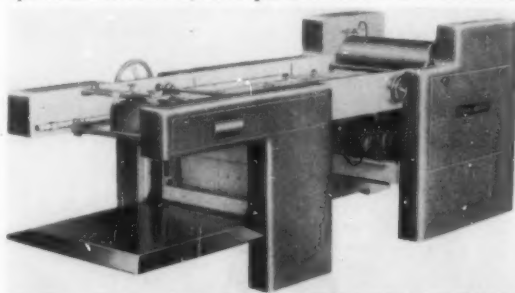
Wire stitcher for filled cartons

Acme Steel has introduced a wire-stitching machine designed for secure stitching of the outer and inner flaps of full-overlap corrugated cartons after they have been filled. The company's Model HOHT Silverstitcher also can be used to fasten the sides of five-panel folders, the outer and inner sections of telescoping boxes and double or triple slide boxes. The machine, reported to speed up packaging operations, has a horizontally mounted stitching mechanism and a power-driven penetrating clincher. In operation, the clincher is driven through the edges of the box just below the score line, after which

the stitch is placed through the inner and outer top flaps and clinched. The unit operates at a rated speed of 200 stitches per minute, according to the company. *Acme Steel Products Div., Acme Steel Co., 135th St. & Perry Ave., Chicago 27.*

New paper cutter and lift table

Two new packaging-equipment items have been announced by Clark-Aiken. The first of these is its Type G cutter machine, which reportedly offers complete sheet control and cutting speeds of more than 1,000 ft. per minute. The unit will handle

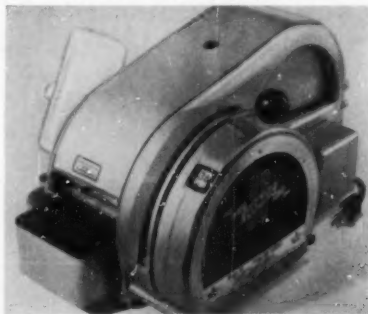


paper in widths up to 46 in., with accuracy within 0.015 in., the company claims. Other cited advantages of the machine include a high-speed balanced cast semi-steel knife cylinder, a screw-type elevating system with overhanging piler, a high-speed tape system with overlapping delivery and air-controlled pinch rolls. Accurate piling is accomplished by a reciprocating jogger and new back and side joggers. The supplier's second new unit, a lift table, is available in three standard sizes, 54 by 24-28 in., 54 by 32 in. and 72 by 38 inches. The one-piece heavy steelplate tabletop may be stopped at any desired height and will collapse to a height of 7 in., according to the company. Lift power is provided by a hydraulic cylinder. Electronic equipment for automatic positioning also is available from the supplier. *Clark-Aiken Co., Lee, Mass.*

Exact-length tape dispenser

An electric packaging-tape dispensing machine that permits preselection of tape lengths of from 6 to 70 in. is available from Nashua. Called the 98 Vuematic Tay-Per, the unit has a

glass-enclosed dial that reveals the exact length of moistened tape that will be dispensed. The operator selects the desired length of tape by means of a manual-control knob positioned just above the dial. A positive lock mechanism



assures identical repeat lengths to speed up packaging and minimize tape waste, the company says. Other cited advantages include safety of operation, a positive automatic platen-pressure control to assure uniform moistening, and thermostatically controlled water temperature. The unit accommodates standard-diameter rolls of paper, cloth or fibre-reinforced tape from 1 to 4 in. wide. *Nashua Corp., Nashua, N. H.*

Improved shipping drum for resins

Available from Continental Can is an improved drum for the shipment and storage of acrylic molding powders. Developed in cooperation with E. I. du Pont de Nemours & Co., the new Leverpak is constructed of fibre, foil and an inner coating of polyethylene. Because the three materials are permanently bonded, the supplier says, the new drum eliminates the static attraction of dust that may be caused by handling loose drum liners, is extremely resistant to moisture penetration and has excellent burst strength. The abrasion resistance of the inner coating of polyethylene also prevents the possibility of the

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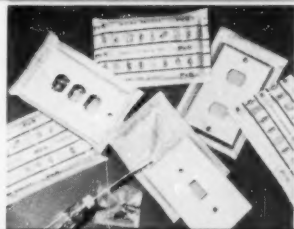
PROBLEM: Package dry soup mix in sales appealing print labeled pouch with positive protection from moisture absorption.

SOLUTION: Thilco white M. G. Kraft is foil laminated one side and clear polyethylene coated on other side for required moisture barrier. Eye catching 4-color label decoration is Thilco flexo-printed on gleaming foil side.



PROBLEM: Protect plastic switch plates from dirt and moisture — identify product, and permit consumer selection without opening package.

SOLUTION: Thilco trade-mark decorated M. G. Kraft with scuff-proof, varnished overlay on one side and clear polyethylene coating on other provides protection and medium for heat sealing to "see-thru" cellophane that forms pouch.



PROBLEM: Provide a moisture barrier pouch packet to prevent "caking" of hygroscopic dye granules.

SOLUTION: Thilco polyethylene one side coated M. F. Kraft furnishes the ideal moisture barrier combination. Thilco flexo-printing provides the all-important trademark identification.



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Equipment and materials

resin being contaminated by particles of the container during handling, the company claims. *Continental Can Co., Gair Fibre Drum & Corrugated Box Div., 530 Fifth Ave., New York 36.*

Polyurethane foam with adhesive surface

Panostic, a packaging and display material which consists of polyurethane foam coated on both sides with a pressure-sensitive adhesive, is now being marketed by Panostic Display. The material, available in 1- and 2-in.-wide strips of 50-yd. lengths, is suggested for packaging fragile articles or products which must be fixed to their containers.

The adhesive surfaces are protected until required for use by a vinyl film which can be peeled off easily. Illustrated here is a typical packaging application. In the top photo, a strip of the material has been placed on the platform of a pen box and the



protective vinyl film is being removed. In the second photo, the pen has been secured to the adhesive surface of the polyurethane foam. Note how, even with the box in inverted position, the pen remains in place without the need for elastic loops or other fastening devices. *Panostic Display Co., Ltd., 6 Cumberland House, Kensington High St., London W. 8, England.*

Automatic shipping-case coder

Pryor Marking's Model B consecutive-numbering attachment reportedly can be set up on any existing conveyor line to print on the bottom, top or sides of shipping cases. Equipped with six automatic wheels containing $\frac{1}{2}$ -in. rubber numbers, the attachment has a foam-rubber ink reservoir that holds sufficient ink for up to 30,000 impressions, the company says. *Pryor Marking Products, 434 S. Wabash Ave., Chicago 5.*

Improved brackets for air doctor

A new bracket design provides simplified and improved adjustment for its Warren-Dilts air doctor for coating machines, claims Black-Clawson's Dilts Div. The new design reportedly allows pivoting of the lips about the impact center of the doctor so that the angle of impact can be altered without requiring other compensating adjustments. The new brackets also make air-doctor blades more accessible for cleaning, the supplier says. *Black-Clawson Co., Dilts Div., Fulton, N.Y.*

High-speed packaging in paper bags

Its automatic K&M Bagger has been designed to provide economical, high-speed packaging of multiple units in paper bags, says Union Bag. The machine loads a variety of soft or hard goods into bags at a rated speed of up to 18 bags per minute. In operation, the bagger first positions the units to be packaged on a mobile former, simultaneously picking up and opening a bag from its storage bin. The movable former carries the units into the open bag, which is then automatically folded, closed and taped by a folding-and-sealing unit. *Union Bag-Camp Paper Corp., 233 Broadway, New York 7.*

Blow molder for bottles

An automatic blow-molding machine designed for high-speed production of plastic bottles in sizes of up to 1 qt. is available from Blow-O-Matic, American distributor of the Danish-made unit. According to the supplier, the machine is capable of producing 1,000 two-oz. bottles per hour. It consists of two elements: a cast-iron blow molder and a control box which supplies the power and the impulse for manual or fully automatic molding. Movements of the blow molder are hydraulically operated, and compressed air is used for forming the product, for ejection and for operation of the cut-off knife. The supplier says that the machine may be connected to any standard extruder. *Blow-O-Matic Corp., Bridgeport, Conn.*

Moisture-tight polyethylene box

A strong, tight-closing polyethylene box for the protection of small parts—such as ball bearings, lenses, electronic components and instrument parts—is offered by Clover Industries. Called the Vac-Tite, the opaque, circular telescoping box closes so tightly that it seals out moisture, yet is easy to open because of the rigid $\frac{1}{4}$ -in. flange around its top and bottom, the company says. Other cited advantages of the container are its resistance to impact and its rigidity under weight pressure. The polyethylene box is available in diameters of $\frac{1}{2}$ to 3 in. and depths of $\frac{1}{2}$ to $\frac{7}{8}$ in. Special raised lettering can be supplied. *Clover Industries, Inc., Tonawanda, N.Y.*

Hole-punching attachments for film

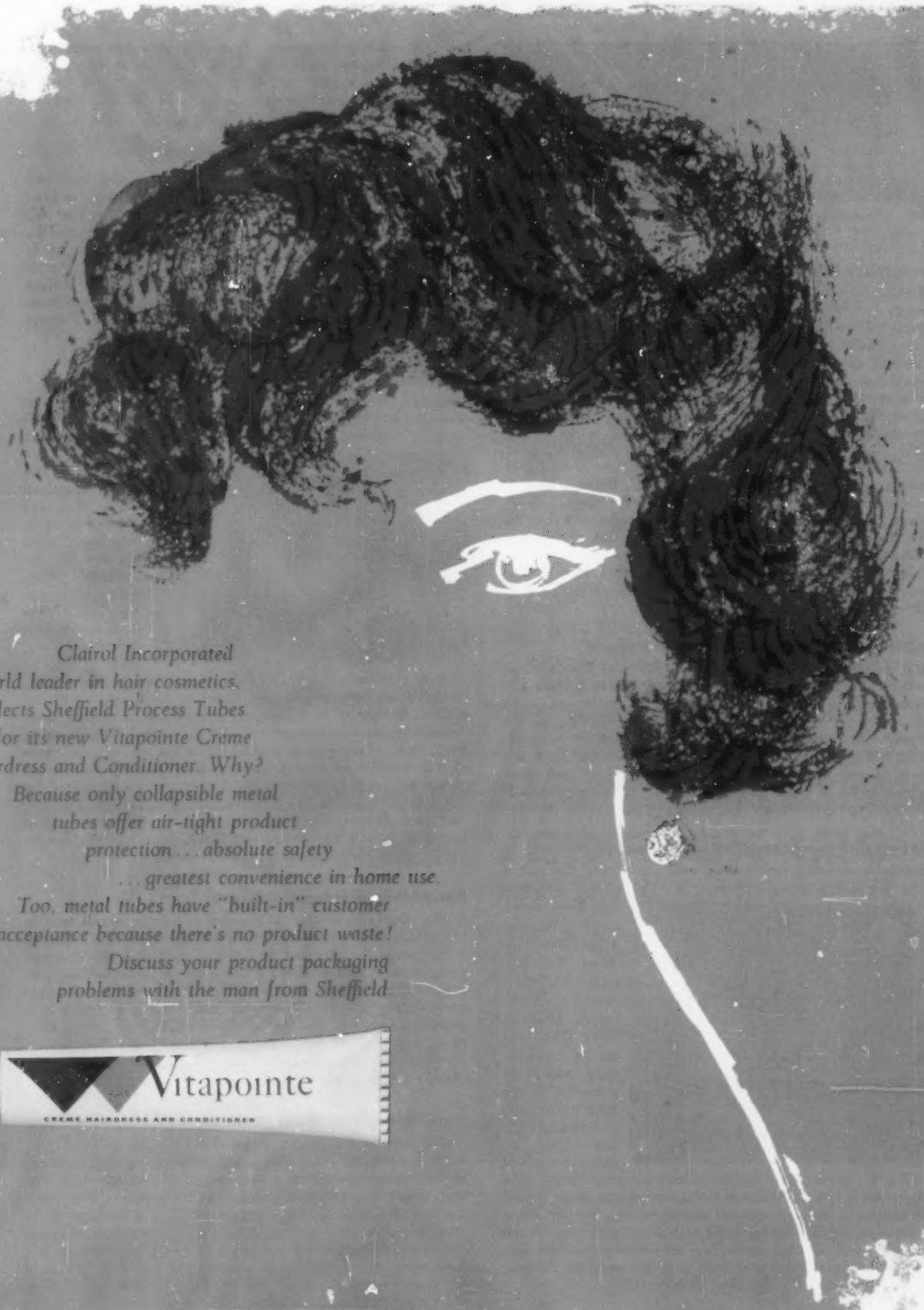
Two new attachments for punching holes in a web of polyethylene film, which reportedly can be used on any standard bag-making machine, are being offered by Schjeldahl. Shown



is the "Schjel-Punch," a single-hole punching attachment which will make either a complete hole or a partial punch. The device permits polyethylene bags to be deflated before sealing, to prevent billowing. The company's other new attachment, the "Schjel-Drill," is a multiple-hole perforator. Designed to permit adequate ventilation of polyethylene produce bags, the unit has rotary drill heads which assure positive hole punching without blocking, the supplier says. It is available in two sizes: a 19-hole bank for use on 20-in. webs and a 38-hole bank for 40 in. webs. *G. T. Schjeldahl Co., Northfield, Minn.*

Silk-screen press for large sheet sizes

General Research & Supply's Model 76 silk-screen cylinder press is designed for use by plants producing printed folding cartons or large posters. It is capable of handling sheet sizes of up to 52 by 76 in. at speeds to 1,500 sheets per hour, the company claims. The press prints on paper, board, plastics or foil and handles regular, fluorescent or metallic inks as well as glue, varnish and other mediums. According to the supplier, high-speed quality production is made possible by such features as automatic feed, micrometer stencil-register adjustments,



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precision sheet guides, vacuum cylinder sheet control and completely adjustable squeegee pressure control. *General Research & Supply Co., Grand Rapids, Mich.*

Air-actuated valve bag packer

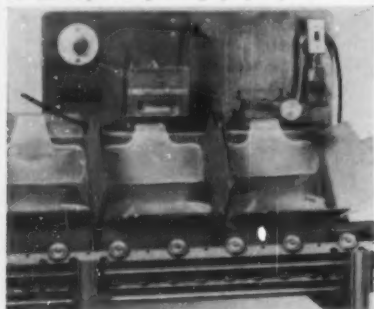
Coddington's new Air-Pac valve-bag packer utilizes small amounts of low-pressure air to fill standard valve bags with powdery or free-flowing materials. Dispersion of the air through an air dome in the machine's hopper activates the material to be packed, causing it to flow through a spout where it is discharged into the valve bag. The unit, which requires no motor and is reported to have no moving parts, fills standard valve bags of 20- to 100-lb. capacity. A built-in scale automatically stops the filling action when the bag is filled to the correct weight. According to the company, the "fluidizing air principle" of its electric-operated machine prevents crushing or breaking down of the material being packed, because there is no inertia impact to cause product injury. Another cited advantage is reduced bag costs. The company points out that the unit's small-diameter spout fits into the valve opening of minimum-size bags, which are ready for shipment as soon as they are filled, without the need for closing equipment or time for closing the bag. *E. D. Coddington Mfg. Co., 5024 N. 37 St., Milwaukee 9.*

Custom-sized linear polyethylene sheet

Linear polyethylene has been added to Midwest Plastic's line of extruded thermoplastic sheet materials. Called Midlon LP, it is available in sheets of 0.010 to 0.150 in. thick and up to 40 in. wide, cut to individual requirements. According to the company, the material's resistance to temperature extremes and its non-toxicity lend it to use for houseware and food containers as well as to pharmaceutical and medical packaging. It can also be used in shipping containers. *Midwest Plastic Products Co., 1801 Chicago Rd., Chicago Heights, Ill.*

Heat sealer for cube-container spouts

A manually operated heat-sealing unit for closing the spouts of its liquid-dispensing polyethylene "Cubitainer" packages



has been developed by Hedwin. (See "Two New Ways for Battery Acid," *MODERN PACKAGING*, April, 1958, p. 134.) The company's Model HS-7 sealer reportedly can close up to 1,200 Cubitainers per day. The machine consists of a radiant heater and hand-operated clamp mounted above a 5-ft. roller-conveyor section which is set at a 45-degree angle. Filled Cubitainers, in their opened corrugated cartons, are fed along the conveyor to the heating and clamping operations. Dwell time of 15 to 25 seconds, depending on polyethylene-liner size, is controlled by a timer unit built into the machine. *Hedwin Corp., 1600 Roland Heights Ave., Baltimore 11.*

In-plant imprinter for multiwall bags

Designed for in-plant imprinting on multiwall bags is Industrial Marking Equipment's new automatic-feed bag printer. The unit, which is adjustable for various bag sizes, is claimed to eliminate preprinting and bag obsolescence and to simplify inventory. Intended for use in conjunction with production-line filling equipment, the unit feeds and prints up to 20 multiwall

bags per minute, the company says. A vacuum-pump operated feeding mechanism feeds bags to be printed from a magazine which holds up to 300 bags. The automatic printer can be operated intermittently or continuously. *Industrial Marking Equipment Co., 655 Berriman St., Brooklyn 8.*

Wood-filled urea for closures

Wood-filled urea, reported to combine economy with improved performance characteristics in the manufacture of molded screw-type closures, is available in volume quantities from Allied Chemical's newly created Plastics & Coal Chemicals Div. According to the supplier, economy is achieved by using finely ground wood flour as the filler. Called Plaskon, the material is claimed to offer improved color fastness and to produce rigid moldings with hard, durable surfaces resistant to intense heat, solvents, soap, oils and grease. *Allied Chemical Corp., Plastics & Coal Chemicals Div., 40 Rector St., New York 6.*

Container inspection and rejection system

Industrial Nucleonics is offering an automatic device that measures the height of filled material in individual metal cans or other containers, then actuates a rejection mechanism that



removes from the conveyor line any container which does not conform to specifications. Called the AccuRay Individual Container Fill Inspection and Rejection System, the unit (shown here in operation

in a brewery) is claimed to be accurate within $\frac{1}{64}$ in. of target fill level and to accommodate 1,000 containers per minute. It consists of a measuring head and a control unit. As containers to be measured for fill pass under the measuring head, small changes in individual fill height produce variations in the amount of energy passing from the head's isotope-energy source to its detector. These energy variations are translated into corresponding voltages and fed into the control unit (not shown), which actuates the reject mechanism when incoming voltage violates pre-set limits. *Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus, O.*

For better corrugated boxes

A new single facer that is claimed to eliminate roll trouble in corrugated-box production is available from F. X. Hooper. According to the company, its machine has a specially designed tooth contour that provides a low take-up factor without cutting, to insure the production of high-quality corrugated board economically and at a saving in time. The new design also permits pneumatic loading of the pressure and corrugating rolls (mounted in self-aligning bearings) with full adjustability of the pressure on each journal. *F. X. Hooper Box Machinery Dept., Koppers Co., Glenarm, Md.*

Fully automatic steel strapper

No operator is needed for Acme Steel's fully automatic F1J steel-strapping machine, which applies strapping with uniform, predetermined tension to a wide range of package sizes. The unit, which has unlimited take-up, can be integrated into existing conveyor systems, the company says. As a package to be strapped moves into the machine (via a short length of power conveyor), the size of the package is electronically "sensed" and the proper strapper pattern is selected and actuated. The package is positioned by an automatic ram located at the front of the steel-strapping machine. *Acme Steel Products Div., Acme Steel Co., 135th & Perry Ave., Chicago 27.*

Spot-glue guns for carton making

John P. Fox Co.'s line of spot-glue guns is designed for accurate positioning of $\frac{1}{4}$ -to-1-in. circular spots of glue on carton flaps and similar surfaces. The guns come in automatic or manual models. *John P. Fox Co., Monrovia, Calif.*

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FAST—up to 120 cartons per minute.

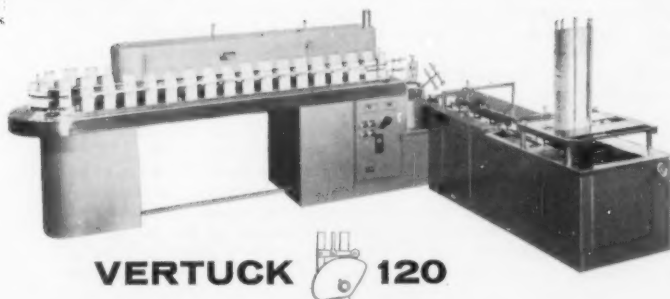
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Plants and people

Presidents for two of its wholly owned subsidiaries and three internal promotions have been announced by American Can Co., New York.



Leghorn Martin

Kenneth M. Leghorn, former pres. of **Sun Tube Corp.**, Hillside, N. J., becomes pres. of **Bradley Container Corp.**, Maynard, Mass. He is succeeded by **Joseph D. Martin**, formerly exec. v.p. of **Sun Tube**. **Garland W. Reese**, with **American Can**



Reese Britzke Thompson

since 1920, becomes v.p. in the company's executive dept. **Robert B. Thompson** succeeds him as v.p. of manufacture, **Canco Div.** **Leonard A. Britzke** succeeds Mr. Thompson as gen. mgr. of manufacture for the division.

Mead Containers, Inc., Cincinnati, wholly owned subsidiary of **The Mead Corp.**, has acquired **Grand Rapids Container Co.**, Grand Rapids, Mich., which makes corrugated shipping containers and corrugated packaging for the automotive, furniture and other industries. There will be no change in management or personnel, and the company will be operated as the **Grand Rapids Div.**



Didriksen

J. William Didriksen has been elected pres. of **Ekco-Alcoa Containers Inc.**, Wheeling, Ill. The company, jointly owned by **Ekco Products Co.** and **Aluminum Co. of America**, manufactures aluminum-foil containers. Mr. Didriksen, who succeeds **John M. Mitchell**, now in a new post at **Alcoa** headquarters in Pittsburgh, joined **Ekco Products** in 1947 and has been a director of **Ekco-Alcoa** since the firm's inception in 1955.

James B. Brennan has succeeded **Clarke Marion** as pres. and gen. mgr. of **Dairypak, Inc.**, Olmstead Falls, O. Mr. Marion becomes chairman of the board. **Walter O. Faber**, pres. of the firm's **Butler Div.**, has been elected v.p. of operations for the parent company. **Dairypak**, owned jointly by **The Champion**

Paper & Fibre Co. and **Diamond-Gardner Corp.**, manufactures "Pure-Pak" fibre milk cartons.



Kneip

Union Bag-Camp Paper Corp., New York, has appointed **Frederick E. Kneip** as director of container sales for the company. Mr. Kneip, who has been associated with **Union Bag** since 1941, served most recently as mgr. of both sales and mfg. for the firm's corrugated-box plant which is located in **Lakeland, Fla.**

Continental Can Co., New York, has sold its 50% interest in the **Cochran Continental Container Corp.**, Louisville, Ky., to **Cochran Foil Corp.**, sub. **The Anaconda Co.**, Louisville. In a joint venture with the former **Cochran Foil Co.** (see **MODERN PACKAGING**, June, 1958, p. 150), **Continental** formed **Cochran Continental** in 1956 to manufacture and distribute rigid foil containers for application by the bakery and frozen-food industries.

Henry G. Van der Eb has been elected v.p. in charge of mktg. for the folding-carton div., **Container Corp. of America**, Chicago. He will retain his position as chairman of the division's marketing committee, and will also be in charge of research and development. His headquarters are in Philadelphia. In **Container Corp.**'s shipping-container div., two new gen. sales mgrs. have been named. They are **Edwin H. Bixby** and **James F. McDowell**. Both men have been with the company over 20 years.



Van der Eb

Celanese Corp. of America, New York, has set up a mktg. dept. within its plastics div. and has appointed **Edward W. Ward** as its director. **Dr. Paul W. Moeller** succeeds him as sales mgr. of the division. The new department consolidates sales and market development with advertising and sales promotion, sales development and the facilities of **Celanese's** **Plastics Product Application and Technical Service Laboratories** in Newark. **Dr. Moeller** is succeeded as market-development mgr. of the company by **James W. Flynn**.

Niemand Bros., Long Island City, N. Y., recently purchased **Cellu-Fibre Can Corp.**, and will operate the firm as a wholly owned subsidiary. The move is designed to diversify and expand the company's operations to include additional lines of paper, metal-end and liquid-tight containers for the packaging of food and dairy products.

A new sales, technical and service dept.—designed to coordinate preparation of new products for aerosol packaging—has been established by **Valve Corp. of America**, Bridgeport, Conn., maker of aerosol valves and fittings. The department will be headed by **Roy Ferry**, **VCA's** chief engineer.



Vogel

Reynolds Metals Co. has established a plastics sales div. at its **Richmond, Va.**, headquarters. **W. J. Vogel** has been named gen. mgr. of the new division. He was formerly mgr. of the company's plastics plant at **Grotoes, Va.**, from which he directed plastics sales operations. He is succeeded there by **Richard M. Chamberlin**, formerly asst. plant mgr.

Sydney G. Pettitt has been appointed tech. director of the packaging group of **Fibreboard Paper Products Corp.**, San Francisco. The group is a new set-up within the company designed to coordinate **Fibreboard's** regional packaging-manufacturing operations.

William R. Siems is the new advtg. mgr. for **Bemis Bro. Bag Co.**, St. Louis.



Siems



Wheeler

He succeeds **Garth D. Salisbury**, resigned. Mr. Siems, who joined **Bemis** in 1955, became asst. to the advtg. mgr. early in 1957.

The new post of supervisor of new-product merchandising at **Bemis** has been filled by **P. L. Wheeler**, formerly a representative in the New York general sales division.



Kraleman

Arthur Burk Kraleman has been appointed mgr. of beverage-packers can sales, a newly created position, by **Crown Cork & Seal Co.**, Philadelphia. Mr. Kraleman was associated with **Crown** from 1937 to 1956. Previous to his present appointment, he was **Central-div. sales mgr.** for **National Can Co.**, Chicago.

A new company for the conduct of foreign-trade operations has been formed by **Spencer Chemical Co.**, Kansas City, Mo. **Spencer Chemical International, Inc.**, a wholly owned subsidiary, has been incorporated in the Republic of Panama to conduct worldwide sales operations of exportable **Spencer** products not already covered by existing sales

*Corrugated box
with built-in
protection*



Hotpoint ovens travel to kitchens in custom-designed Hinde & Dauch shipping boxes. Interior packing prevents damage, keeps appliances in factory-new shape. Does your product need king-size protection? Better see H & D.



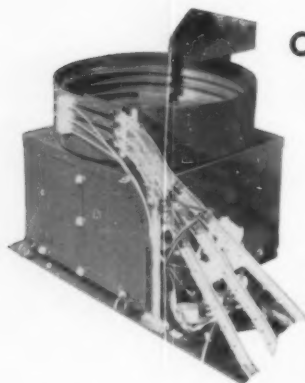
HINDE & DAUCH

Division of West Virginia Pulp and Paper Company

AUTHORITY ON PACKAGING • SANDUSKY, OHIO
15 FACTORIES • 42 SALES OFFICES

SYNTRON can supply

either



Complete Vibratory

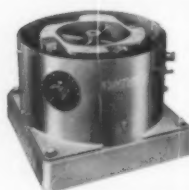
PARTS FEEDERS

with oriented bowl,
discharge track and
escapement devices

Send sample parts and SYNTRON engineers will work out the orientation of bowl, and design discharge track with integral escapement for selective feeding of parts according to specifications.

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You can develop your own Automation
with . . . **SYNTRON**
Vibrating Drive Units
and/or
Bowls



SYNTRON makes it easy for those who have the facilities and prefer to work out their own feeder bowl orientation and discharge track. The vibrating base units and plain bowls can be purchased separately or collectively.

Write for complete information.

Equipment of Proven Dependable Quality

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Syntron can help you with problems involving . . .

Vibrators
(bins, hoppers, chutes)
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(Silicon and Selenium)
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Concrete Vibrators
Paper Joggers

Our representatives will be glad to work with you in selecting the proper equipment for your operation.

Call your nearest Syntron representative

For more information write for complete catalog . . . *Free*

SYNTRON COMPANY

250 Lexington Avenue

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Plants and people

contracts. G. Maynard is pres. of the new company. J. E. Culpepper and Albert Slingerland have been named to the post of v.p. Richard Cahill is secy. treas. Mr. Slingerland will function as European rep.; Mr. Cahill will manage the Panama City offices.

Harold Mosedale, Jr., has been named v.p. in charge of sales for both Package Machinery equipment and Reed-Prentice machinery by Package Machinery Co., East Longmeadow, Mass. Edward W. Mosedale Forth Forth has been promoted to v.p. in charge of both Reed-Prentice and Package Machinery engineering. Both promotions became effective after the recent resignation of J. Joseph Kelly, former v.p. of sales.

Mosedale Forth

Forth

West Virginia Pulp & Paper Co., New York, has established multiwall- and grocery-bag manufacturing operations on the West Coast. The facilities, located in a new plant in Torrance, Calif., went into production last month.

Owens-Illinois Glass Co., Toledo, O., has named Elliot R. Owens to the newly created position of v.p. and tech. director for its Glass Container Div. He will supervise research and engineering for three O-I Glass Container subdivisions: Eastern, Pacific Coast and Closure & Plastics. Eliot Marr succeeds Mr. Owens as v.p. and gen. factories mgr. of the Pacific Coast Div., and Earle G. Ingels succeeds Mr. Marr as v.p. and prodn. mgr. of the Eastern Glass Container Div.



Owens



Kovach

A new company designed to work on all phases of plastics production, including injection molding, vacuum forming, blow molding, packaging, automation and decoration, has been formed by Leslie J. Kovach, who has served as consulting engineer to a number of plastics-molding companies in the U. S. and Europe. Called K.E.C., the Kovach Engineering & Consulting Co., the new company is located at 215 "A" St., Boston.

Continental Can Co., New York, and Vacuum Research (Cambridge), Ltd., of England, have formed a new company, Vacuum Metallizing Processes, Ltd. Registered in England, it will promote and license, in all territories out-



I CAN
SHOW YOU
HOW TO PACKAGE ALL
YOUR PRODUCTS

IN POLYETHYLENE
automatically
HAYSSSEN CAN DO IT!



Everyone's talking about the advantages of packaging with polyethylene. Superior strength, long durable life, lowest cost of all packaging films are among its features.

To package your products in Poly, you need Hayssen. The plain fact is: Only Hayssen packaging and wrapping machines successfully handle Polyethylene automatically.

Let our experienced Hayssen Packaging Engineers help you "Package in Poly." Contact Hayssen today!

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MANUFACTURING COMPANY
Dept. MP-8, Sheboygan, Wis.
first in Automatic Packaging Since 1910

side North and South America, commercial production of the parent companies' jointly developed and patented process for the metallizing in vacuum of plastic films and papers for packaging.



Adams

Fred G. Adams has been named to the newly created position of mktg. director by Chicago Molded Products Corp., Chicago. He will serve as staff asst. to the pres. and gen. mgr. on all matters concerning marketing. His duties include the coordination of all activities of the advertising, sales-promotion and market-research departments of the company.

Following its recent acquisition of Acme Tea Chest Co., Ltd. and its subsidiary, Empire Aluminium Co., Ltd., Venesta, Ltd., London, England, has established the Venesta Foil Div. According to the company, its new division produces 40% of England's total foil output and also accounts for 45% of all foil exports.



Ives

Robert S. Ives has been named director of research by Ludlow Papers, Inc., Needham Heights, Mass. Prior to joining Ludlow, Mr. Ives was pres. of his own research consulting firm. He is a member of the American Chemical Society, Technical Assn. of the Pulp & Paper Industry and American Assn. of Textile Chemists & Colorists.

Pacific Coast Foil Co., San Francisco, has appointed M. T. Schechtman as gen. mgr. Mr. Schechtman comes to Pacific Foil from the Shellmar-Betner Div. of Continental Can Co. Prior to his association with Concan, he was product mgr. for industrial tapes with Permaceel Tape Corp.



May

William F. May has been appointed national sales mgr. for processed food containers in the Canco Div. of American Can Co., New York. He is succeeded as Central area mgr. of manufacture by C. F. Heiberger. Mr. May, who has been with American Can since 1928, succeeds R. M.

Roberts, now assigned to special duties at the company's headquarters.

Doughboy Industries, New Richmond, Wis., producer of equipment and machines for packaging industrial and consumer products, is expanding its Mechanical Div. as part of a new program for the development and manufacture of new packaging machines.

Vaculite Corp., Cambridge, Mass., is now being operated by a management team drawn from its parent organizations, The Champion Paper & Fibre Co. and National Research Corp. Charles G. Ellington of Champion is v.p. and gen. mgr. Frank Carter, also of

[Continued on page 148]

YOUR PRODUCT IN A
NIEMAND INDUSTRIES
PACKAGE . . .



**practical,
profitable
... and
attractive**



Do you need a tubular package that's durable, economical, easy to fill, handle and store — one that's attractively printed and handsomely styled with decorative papers or your label for effective, eye catching appeal?

You get every one of these features and lots more **all in one package** — if it's a Niemand Industries tubular package.

Manufactured to your exact specifications, Niemand Industries tubular packages come in a wide range of sizes, with many convenient closures of metal, paper or plastic — with shaker or sifter dispensers where needed.

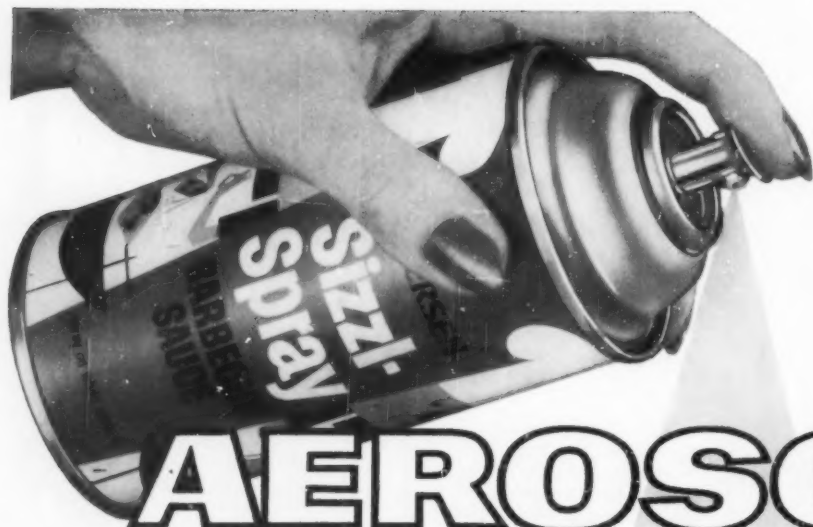
Let us design a sample package for your line of products. There's no obligation, of course — write for detailed literature.

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INDUSTRIES, INC.**

*Manufacturers of
Paper Tube Products*

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STATESVILLE, NORTH CAROLINA





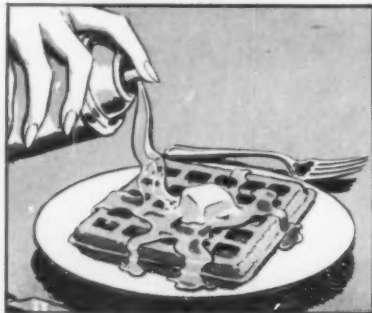
Pioneered

AEROSOLS

BARBECUE SAUCE

Barbecue sauce achieves new convenience and ease of use in an aerosol can by Continental. Barbecue sauce is dispensed in a spray pattern.

MAPLE SYRUP



CHOCOLATE SYRUP



SALAD OIL



and perfected by
Continental Can...

FOR FOOD

**New Continental Development* ushers in
new era of food packaging!**

*In cooperation with Andersen Foods Co., division
of Heublein, Inc., and Western Filling Company.

New food products get "push-button" dispensing! New Continental aerosol cans dispense either oil or water based food products in a *foam, spray, or stream pattern*.

This Continental development brings food packers to the threshold of a spectacular new market. Push-button foods from barbecue sauce to chocolate syrup are already on the market or will soon appear. Sales of aerosol foods promise to surpass the amazing success of non-food aerosols which skyrocketed to 350 million units in 1957.

Numerous new food products are now being tested at Continental's new Research and Development Center. Fillers and valve and equipment suppliers have cooperated to make this packaging break-through a commercial reality. For an appraisal of your food product's potential in an aerosol food can, call your nearest Continental representative.

CONTINENTAL © CAN COMPANY

Eastern Division: 100 East 42nd Street, New York 17
Central Division: 135 South La Salle Street, Chicago 3
Pacific Division: Russ Building, San Francisco 4
Canadian Division: 5595 Pare Street, Montreal, Que.

CHEESE SPREAD



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New types of Patapar® give you a
REAL BARRIER
 against penetration of
GREASE, FATS, OILS



As an inner protective barrier for multiwall bags . . . or wherever a grease-proof material is required, new types of Patapar Vegetable Parchment meet the most exacting requirements. These special grease-proof Patapars stop penetration. Oil will not spread on Patapar's surface. There is no grease "crawl".

Wet-strength, too

Permanent high wet-strength is another quality of the many different types of Patapar. And, made from pure cellulose, Patapar is odorless, non-toxic. It is furnished plain or colorfully printed.

If you would like to test Patapar for your product, write us telling your requirements. We'll send information and samples of the type we recommend for your purpose.

Patapar®
VEGETABLE
PARCHMENT

HI-WET-STRENGTH • GREASE-RESISTING

HEADQUARTERS FOR VEGETABLE PARCHMENT SINCE 1885



Plants and people

[Continued from page 145]

Champion, is prodn. mgr., and Allan R. Dragone represents NRC as v.p. of sales for Vaculite. The company makes metallized paper for packaging.

Walter S. Liebman, v.p. of the Morris Paper Mills Div. of Federal Paper Board Co., Bogota, N. J., has retired after 31 years with the firm. Mr. Liebman began his career with the Texas Paper Co., a company established by his father in 1883.

Eugene J. Sullivan, formerly v.p. of sales, has been named exec. v.p. of Borden Chemical Co., New York.



Kauffman

Robert D. Kauffman has been named gen. mgr. of Thunderbird Plastics, Inc., Minneapolis. The firm recently purchased the injection-molding and custom-extruding departments of Chippewa Molding, Inc., Chippewa Falls, Wis., where Mr. Kauffman was gen. mgr. The acquisition will enable Thunderbird to expand its extruding as well as injection-molding and vacuum-forming services.

Leonard Dalsemer, pres. of Lord Baltimore Press, Inc., New York, and v.p. of its affiliate, International Paper Co., New York, has been elected to International's board of directors. Mr. Dalsemer also is a director of the Folding Paper Box Assn. of America.



Rusnak

Earl J. Rusnak, a veteran in the furniture field, has been appointed mgr. of furniture-packaging sales for the corrugated div. of Stone Container Corp., Chicago. Mr. Rusnak was formerly a partner in Rusnak Bros., Chicago furniture retailer. He recently was presented with the National Retail Furniture Assn.'s annual award for outstanding service to the industry and the community.

Dr. Peter L. Shanta has been appointed tech. director by Taylor Fibre Co., Norristown, Pa. Dr. Shanta will supervise all research, product development and quality-control activities of the company. He succeeds Dr. C. N. Jacobs, who will retire this December.

The Chicago office of the Containerboard & Kraft Paper Div., Continental Can Co., New York, has been moved to 135 So. LaSalle St.

G. Barr & Co., Chicago aerosol packager, has expanded its research and development-laboratory facilities. According to the company, the increased



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USE ROTOGRAVURED FOIL by Milprint

It's one thing to catch and package a fish... it's another to make sure the package catches your customers! How do you do it? Well, one way is with the time-tested lure of sparkling foil—rotogravure printed with lifelike appetite appeal the precision Milprint way. First to print foil successfully, Milprint still leads the way to greater sales with copper-stopping packages like these—designed and printed by Milprint craftsmen.

For allure in print—call your Milprint man, first!

Milprint* INC.
PACKAGING MATERIALS

printed cellophane, pit-film,
polyethylene, saran, acetate, gluesine,
vitafilm, "Mylar"®, foils, laminations,
fold-up cartons, bags, lithographed displays,
printed promotional material

this insert lithographed
by Milprint, Inc.

*Reg. U.S. Pat. Off.

general offices, Milwaukee, Wisconsin / sales offices in principal cities



**YOUR
BEST
BUY!**

*in a 3-WAY
PACKAGING
MACHINE!*

HANDLES POLYETHYLENE WITH EASE!

The new improved VERTI-PAK combines simplified design and smart engineering for trouble-free operation with polyethylene, poly-cel, K-202, or cellophane! One machine (with adapter) will handle cello and poly interchangeably! Makes packages up to 10" wide and 18" long. Verti-Pak will do more things better than any similar machine and at lower cost! Write for BROCHURE now!

PRODUCTS NOW BEING PACKAGED:

Balloons	Macaroni	Rice
Beans	Hardware	Rolls
Bread	Plastics	Salt & Pepper
Candy	Potato Chips	Seeds
Coffee & Tea	Pretzels	Spinach
Edible Nuts	Popcorn	Textiles
Fertilizer	Radishes	Toys

We can add your product, send sample!

MERCURY
HEAT SEALING EQUIPMENT CO.

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Plants and people

research and development will be related principally to nitrogen-propelled products, which are growing in number.

Fibreboard Paper Products Corp., San Francisco, has installed a new five-color lithograph press with an annual capacity of 200,000,000 cartons at its Vernon, Calif., plant. Printing facilities at the plant now include letterpress, rotogravure, flexography and lithography.

The Andrew M. Martin Co., Los Angeles, has acquired Copolymer Corp., Los Angeles. Copolymer specializes in the compression molding of glass-reinforced polyester shapes. A. M. Martin is now pres. of Copolymer and Frederick W. Wade has been named v.p.

In a plant- and equipment-expansion program, Wolf Bros., Philadelphia, has installed high-speed printing and bag-making equipment. The company also has integrated its box-manufacturing div. into the new facility.

The Mead Corp. has closed its Washington, D. C., office and has transferred all operations to company headquarters at 118 W. First St., Dayton, O.

A new plant for the production of thermoplastic packaging materials has been opened in Toronto, Canada, by The Cryovac Co., div. W. R. Grace & Co., Cambridge, Mass.

A. Kimball Co., sub. United Shoe Machinery Corp., New York, has moved to new and larger quarters at Rewe St., Brooklyn 11. The company manufactures tickets, tags, labels, marking-machine systems and punch-tag markers.

Miller & Miller, Inc., Atlanta, label and folding-carton manufacturer, has completed construction of a new plant in Stone Mountain, Ga.

Cornell Paperboard Products Co., Milwaukee, has moved its Chicago office to Suite 1820, 20 N. Wacker Dr.

Knox Glass, Inc., recently opened a new mold plant at Reno, Pa.

Robert G. Neubauer, Inc., package design, has moved to new offices at 234 Greenfield St., Fairfield, Conn.

Paper Converting Machine Co., Green Bay, Wis., recently moved to a large new plant in Green Bay.

John Strange Carton Co., Menasha, Wis., has started work on a new plant in Menasha that will house all company office and manufacturing facilities.

Promotions

G. Thomas West: to gen. mgr., Eastern Div., General Printing Ink Co., div. Sun Chemical Corp., New York. Walter



Sticking Problems?

use
SLIPICONE
silicone release agent

ON ALL PACKAGING AND LABELING EQUIPMENT

SLIPICONE® makes sticky spots slick . . . prevents adhesives, packaging materials, foods and food products from sticking where they're not wanted. SLIPICONE keeps equipment clean, cuts downtime and maintenance costs, speeds operations . . . SLIPICONE saves you time and money!

SLIPICONE is nontoxic, won't attack any surface, and is unaffected by temperatures from -40° to 400° F . . . won't gum-up or run-off equipment when heated. Try SLIPICONE, the Dow Corning silicone release agent, now . . . and give your sticking problems the slip!

Write for list of SLIPICONE distributors . . . Dept. 738.



Dow Corning CORPORATION
MIDLAND, MICHIGAN



Just spray or wipe it on:
Sold in 12 oz. aerosol cans, 2 and 8 oz. tubes, 10 lb. cans.

Venema: to sales mgr., Midwest Div. Carlton V. Poley: to gen. mgr., New England branch. Anthony C. Fucillo: to sales mgr., New England branch.

J. I. Miller: from gen. mgr., Pittsburgh, to mgr. of national account sales, The Ohio Boxboard Co., Rittman, O.

Frank W. Seineke: to tin-plate mgr., National Can Corp., Chicago. He was formerly Los Angeles plant mgr. of the company's Pacific Can Co. Div.

Seth L. Bucklen: to mgr., Atlanta district office, Glass & Closure Div., Armstrong Cork Co., Lancaster, Pa.

Fred Willis: to director of mktg. development, a newly created position, The Toni Co., div. The Gillette Co., Chicago. Joseph L. Shapiro succeeds him as director of market research.

Donald E. Wright: to district sales mgr., St. Louis plant, Hinde & Dauch, div. West Virginia Pulp & Paper Co., Sandusky, O. He succeeds W. Reed Scull, who resigned recently.

John M. MacDonald: to mgr. of market development, Appleton Machine Co., Appleton, Wis.

P. D. Dilliard: to mgr., chemical research and development laboratory, Anchor Hocking Glass Corp., Lancaster, O. He succeeds R. F. Brenner, retired.

Richard B. Windhorst: from Chicago gen. sales div. to sales mgr., St. Louis div., Bemis Bro. Bag Co., St. Louis.

James K. Cooper: to asst. sales mgr., processed food and milk cans, Metal Div., Continental Can Co., New York. Peter H. Black: to asst. sales mgr., beer and carbonated beverage cans.

Hamilton Lowe: to Florida district sales mgr., Crown Cork & Seal Co., Philadelphia. His office is in Orlando.

William A. Myers: to asst. sales mgr., equipment div., The Cryovac Co., div. W. R. Grace & Co., Cambridge, Mass.

George F. Dun: to tech. asst. to the exec. v.p., Emhart Mfg. Co., Hartford, Conn. The company makes automatic packaging machinery, glass-container machinery and other equipment.

Edward Brooks: to sales mgr., Cincinnati district, Crown Cork & Seal Co., Philadelphia. He succeeds George Moorehead, now special rep. in the same district.

William T. Black: to acting Pittsburgh div. mgr., Fuller Label Div., Standard Packaging Corp., New York. He also continues as mgr. of Standard's Allegheny Label Div., Cheswick, Pa.

Robert E. Dowds: to staff asst. to the v.p. of mfg. operations, a new position, Milprint, Inc., Milwaukee.

James H. Forshier: to application engineer, sales dept., Hoopeston, Ill., plant of Canning Machinery Div., Food Machinery & Chemical Corp., San Jose, Calif. He will specialize in the engineer-

**accepted
symbol
of
quality**



Cements or adhesives, cosmetics or ointments, colorants or compounds... you can't use more dependable tubes than STANDARD.

Look for
"Standard"
in your classified
phone directory, under
"Collapsible Tubes"

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PRINTING PLATE MATERIALS

ALL FROM ONE!

Technical help, materials
and equipment from
one source



World's largest
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rubber and plastic
plate-making materials
to the printing trade

Williamson & Co. stocks rubber compounded by U. S. Rubber and keeps the rubber temperature controlled for you in each of its six strategically located shipping points. Serving from each of these points are the skilled specialists who can help you solve your technical or mechanical problems.

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or contact U. S. Rubber direct at Providence, R. I.

For rubber or plastic printing plate requirements, see Williamson



Mechanical Goods Division

United States Rubber

the blacksmith was a mighty man...

We know him best as an outstanding example of the craftsman who dominated all work around 1850. He was the master of fire and iron and the hammer and anvil were his only tools. With amazing skill he formed and shaped iron from morning to night, making carriages, shoeing horses, even making arms.

Today we live in an industrial world. The skill demanded of us is to produce more at a lower unit cost with the aid of machines. As part of this trend, the single operation machines used at the beginning of the century are being replaced with machines that combine several operations.

A typical example is our HHH-FLEXOREX, a truly modern flexographic printer and sheeter. It combines five operations and does an outstanding job whenever flexographic multicolor printing on paper is required. This material is then sheeted and stacked in the same operating cycle.

Roll stock is considerably lower in price than flat stock and, when printed multi-color, sheeted and stacked in one continuous operation, you can compete successfully with conventional sheet-fed work and completely underbid any single color type of printing. Flexorex is the press you need to make your printing operations more profitable. Send for bulletin X-119.

H. H. HEINRICH CO. 111 Eighth Avenue,
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The most complete line of proven Flexographic Presses, Bag-Machines, Multiwall equipment and Extruders for thermoplastic materials

The cost of THIS

can pay for THIS



and make YOU a PROFIT too!



Sealamatic
"85"

AUTOMATIC NECK BAND APPLYING MACHINE

It will pay you to investigate the production economy of the Sealamatic "85"—featuring *adjustable speeds up to 85 bottles per minute*; automatic application of either *tubing or pre-cut bands*; handling of all shapes and sizes from *aspirin bottles to gallon jugs*; and affording extremely fast changeover (Bottles—less than 5 minutes for any size; Bands—less than 10 minutes for any diameter). Write for complete information on the versatile Sealamatic "85", or, for high production pre-cut band application ask about Sealamatic "150".

GISHOLT MACHINE COMPANY • MADISON 10, WISCONSIN

Plants and people

ing aspects of new machinery to meet the needs of the packaging industry, according to the company.

Harold Myers: to exec. asst., Specification Packaging Engineering Corp., N. Hollywood, Calif. The company packs and ships a variety of commercial and military products.

Lee Korn: to v.p., Tripl-Tite Tray Div., Standard Folding Trays Corp., Jackson Heights, N. Y.

Appointments

James O. Alexander: from American Car & Foundry Industries to asst. mgr., packaging div., Reynolds Metals Co., Richmond, Va. Mr. Alexander will handle marketing of Reynolds aluminum-foil packaging materials to the baking and milling industries.

Wilson J. Main: from Ruthrauff & Ryan to director of market research, Standard Packaging Corp., New York. He will handle research for all the company's divisions, including those producing paper, film and foil packaging.

Dr. Carl M. Marberg: from Inland Steel Container Co. to mgr. of technical services, Container Div., Jones & Laughlin Steel Corp., Pittsburgh.

Robert E. Neis: from Container Corp. of America, Chicago, to director of mfg., Package Products Co., Charlotte, N. C.

Harvey G. Knuth: to mgr., new-product research dept., Lyon Metal Products, Inc., Aurora, Ill.

William E. Conklyn: from H. R. Stewart Enterprises to sales v.p., Baltimore office, Fife Mfg. Co., Oklahoma City, manufacturer of a line of automatic web-guiding equipment.

Leo T. Ryan: to gen. sales mgr., Vulcan Steel Container Co., Birmingham, Ala., maker of pails and drums.

Obituaries

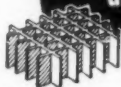
Jerome Samet, senior packaging engineer of Lehn & Fink Products Corp., New York, died June 23. He was 58. Associated with Lehn & Fink since 1925, Mr. Samet was credited with pioneering many innovations in cosmetic packaging. He reportedly was one of the first to develop the use of aerosol packaging for colognes and deodorants.

William P. Brockermann, Jr., v.p. of Wolf Bros., paper products, Philadelphia, died June 27. He was 74 years old.

Arthur G. Jacks, 39, v.p. and treas. of Adolph Gottscho, Inc., Hillside, N.J., died July 11. He was also sales mgr. of the manufacturer of package coding and imprinting machinery.

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...custom-made...

PARTITIONS for Protective Packaging made to your exact specifications for faster packing at lower cost!



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for QUOTATIONS on
YOUR REQUIREMENTS

PETER PARTITION CORP.
operates one of the largest
plants in America devoted
exclusively to the produc-
tion of cardboard partitions.
Because of our unexcelled
facilities, our customers
know we are equipped to
fill orders **FAST, ON TIME,**
and **AS SPECIFIED—at a**
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by Plastic Artisans, Inc.



Sampler
Package

Winthrop Laboratories Gets Sampler, Sales Package and Bulk Packing From 1 Basic Die

Here's a dramatic example of cost-cutting versatility in self-display packaging by Plastic Artisans, Inc. From one basic die, P. A. gives Winthrop Laboratories' suppositories: (1) A striking, 2-unit sampler combining an opaque, colored plastic tray with a clear, slide cover. (2) A self-display, 5-unit, slide cover sales package. (3) A bulk shipping container made of uncut tray sheets.

For further information on Plastic Artisans' package design and production abilities, send for your copy of P.A.'s "Display Packaging" catalog.

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ARTISANS, INC.

Dock Street & Marlin Place
Port Chester, New York



Custom-Designed, Mass-
Produced packages,
package components,
sampling devices, etc.,
in clear, opaque
and colored plastics.



Bulk Packing

PA 118

For your information

The formal organization meeting of the new **Flexographic Technical Assn.** will be held in New York City, Sept. 23. Purposes of the new association, as set down in its charter, are:

"To promote, develop and maintain the advancement of flexographic printing; to work cooperatively on problems of mutual interest . . . ; to develop and maintain standards for flexographic printing; to work cooperatively for the constant improvement of the flexographic printing method of fostering research, technical development and training; to provide a forum for the exchange of information and discussion of problems relating to flexographic printing and better understanding between segments of the industry."

The use of a simplified address-marking system for cartons used by multi-branch ice-cream manufacturers with operations in the New York area has been approved by the New York City Board of Health. Such a coding system, in use in many cities, is being campaigned for nationally by the **Paraffined Carton Research Council**. (See "Cost-Cutting Carton Coder," *MODERN PACKAGING*, Jan., 1958, p. 116.) To implement the new multi-branch labeling program, the New York City Board of Health is asking interested ice-cream manufacturers to file a description of their desired code marks with its Bureau of Food & Drugs.

The fourth annual Informative Labeling Contest, open to all companies and individuals manufacturing consumer products made of plastics, has been announced by **The Society of the Plastics Industry, Inc.** Entries will be judged on the basis of labeling that best tells what the product is, what it is made of, how it is used, how to care for it and what guarantees are offered. A grand award and individual awards for nine major consumer-product categories will be presented at the Eighth National Plastics Exposition and SPI Annual National Conference, to be held Nov. 17-21 in the Hotel Morrison, Chicago. Categories include: apparel, building materials, floor and wall coverings, hardware, home furnishings, housewares, notions, toys and miscellaneous. Entry blanks are available by contacting the organization at 250 Park Ave., New York 17.

James J. Deeney, co-founder of Bensing Bros. & Deeney, has received the 1958 Ault Award, presented by the **National Assn. of Printing Ink Makers** for distinguished contributions to the advancement of the printing-ink industry. Among Mr. Deeney's contributions, as cited by NAPIM, was his development of an opaque flexographic ink for printing on cellophane packaging.

New pres. of **National Fibre Can & Tube Assn.** is **Martin H. Stark** of Arrow

Paper Products Co. Other officers elected at the association's recent 25th annual meeting in Manchester, Vt., are: v.p.—**George R. Browner** of Mead Board Sales, and treas.—**Leo A. Warmuth** of the W. C. Ritchie Div., Stone Container Corp. **Paul S. Hanway**, managing director of NFCTA since its founding in 1933, continues in that post.

Wade E. Griswold, since 1944 executive director of **Lithographic Technical Foundation**, has retired. His successor will be named shortly.

Data showing the high rate of turnover of canned fruits and juices are contained in a 62-page book, "Retail Sales Analysis of Canned Fruits and Juices," recently published by the **National Cannery Assn.** Subtitled "The Philadelphia Project—Report No. 4," it contains (largely in bar-chart form) information compiled from the results of a 12-week survey of 10 Acme supermarkets. A limited supply of copies is available without charge to interested personnel in the food field. Contact NCA at Suite 1100, 551 Fifth Ave., New York 17.

The **Society of Industrial Packaging & Materials Handling Engineers** has revised the program of this year's National Protective Packaging and Materials Handling Competition to give it broader coverage. The former grouping of seven classifications of competition has been consolidated into two sections (packaging for shipment and materials handling in production, warehousing and shipping) with a total of 11 subclassifications. Winners in the competition will be selected at SIPMHE's 13th annual National Industrial Packaging, Handling & Shipping Show at the Chicago Coliseum, Oct. 14-16.

Lowell H. Smith, gen. mgr. of Crown Cork & Seal Co.'s machinery div., has been elected pres. of the **Beverage Machinery Mfrs. Assn.**

The second annual **Package Design Workshop**, aimed at providing an understanding of the creative role of the professional package designer, will begin Sept. 16 at Pratt Institute Evening Art School. Director of the workshop, which will continue for 15 consecutive Tuesday evenings, is **Robert I. Goldberg**, partner in Associated Industrial Designers and a founding member of the **Package Designers Council**. Registration will be held the week of Sept. 8 at the school, 221 Ryerson St., Brooklyn.

At its recent 13th annual meeting, the **Forest Products Packaging Council** elected **R. A. Hickman** of The Dobeckmum Co. as its new president.

The **Chemical Specialties Mfrs. Assn.** has published a 176-page report of its recent 44th annual meeting, including

all papers presented and committee reports. Copies are available at \$7.50 each (\$8 outside the U.S. and Canada) from CSMA, 50 E. 41 St., New York 17.

Lawrence H. Zahn, v.p. of the **Packaging Institute** and mgr. of the methods and package development div. of Ciba Pharmaceutical Products, has been appointed chairman of the production and engineering section of the **Pharmaceutical Mfrs. Assn.** The section was created to develop better methods, efficiency and safety in the manufacture, maintenance and packaging of medicinal products, the association says.

A technical manual, now being compiled, will be published next January by the **National Flexible Packaging Assn.** Assembly of the technical data has been assigned to task groups headed by members of NFPA's Technical Committee, under the direction of committee chairman **Milton I. Bennett** of Cellu-Craft Products Corp. Subjects to be covered in the first edition of the manual, and the person in charge of each, are: "Odor and Taste Evaluation," **Allan O. Corning**, Continental Can Co., Shellmar-Betner Div.; "Packaging Materials Recommendations—Standard Analysis Form," **William C. Heller, Jr.**, Milprint, Inc.; "Plate Distortion and Squeeze Variables in Flexographic

Events

Aug. 11-13—**Western Packaging & Materials Handling Exposition**, Civic Auditorium, San Francisco.

Aug. 24-27—**National Assn. for the Specialty Food Trade**, fourth annual national fancy foods and confection show, the Waldorf-Astoria Hotel, New York.

Sept. 7-20—**Industrial Management Center**, first annual industrial packaging training conference, Lake Placid Club, Essex County, N. Y.

Sept. 8-9—**Canadian Paper Box Mfrs. Assn.**, annual convention, Lake George Sagamore Hotel, Bolton Landing, N. Y.

Sept. 15-19—**Instrument Society of America**, 13th annual instrument-automation conference, Convention Hall, Philadelphia.

Sept. 16-18—**National Paper Trade Assn.**, fall meeting, Conrad Hilton Hotel, Chicago.

Sept. 29-Oct. 3—**National Hardware Show**, Coliseum, New York.

Sept. 30-Oct. 2—**Technical Assn. of the Pulp & Paper Industry**, 9th testing conference, General Oglethorpe Hotel, Savannah, Ga.

Sept. 30-Oct. 2—**Fourth Military-Industry Packaging & Materials Handling Symposium**, Dept. of Commerce Auditorium, Washington, D. C.

Printing," Paul E. Johnson, Standard Packaging Corp.; "Problem Products Which Adversely Affect Packaging Materials," George E. Lacy, The Dobeckmun Co.; "Factors in Waste Measurement," E. N. Leonard, Lassiter Corp.; "Determination of Under-Run and Over-Run Requirements," Adolph Miller, Acme Backing Corp.; "Ink Adhesion Testing," Samuel Ryburn, Package Products Co.; "Curl-Control Measures," John B. Shields, Kiegel Paper Corp.; "Heat-Sealing Polyethylene Surfaces," Charles S. Wicks, Chase Bag Co., and "Bag Adhesive Testing," R. T. Woodford, Arkell & Smiths.

The Fibre Drum Mfrs. Assn. reports that two methods are now authorized for determining the bursting strength (Mullen) of fibre drums for dry, liquid or semi-liquid products. These methods, which are the result of numerous tests, have been incorporated in rail and motor-freight regulations as follows: "Note 1. Cady or Mullen Testing Method for Fibre Components: Either of the following test methods may be used. When more than single ply, test shall be determined from the summation of the tests of individual plies; or, when test is made on a completed drum, the punctures shall be made from the exterior to the interior surface, in which case the values for sidewall shall not be less than 80% of the value [obtained by summation of the tests of individual plies]. There shall be a minimum of six tests and the average [of the tests] shall be not less than the prescribed minimum requirements."

Lithographers & Printers National Assn. is the new name given to the former Lithographers National Assn. According to the organization, the new name better reflects recent changes in the composition of the lithographic industry, which include the addition of such printing processes as letterpress, gravure, flexography and silk screen to plant operations that formerly had been confined strictly to lithography.

Winners in the third annual Flexible Packaging Competition, co-sponsored by the National Flexible Packaging Assn. and *Paper, Film & Foil Converter* magazine, will be announced at the NFPA fall convention at Boca Raton, Fla., Oct. 15-18. A total of 28 categories of flexible-packaging materials and end-use markets will be considered for awards.

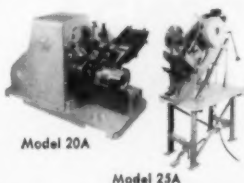
H. A. Kilmer has been named Western regional director of the Society of Industrial Packaging & Materials Handling Engineers.

The fifth Netherlands Packaging Exposition will be held in Amsterdam, April 21-28, 1959. Designated *Europak* 1959, the exposition will feature new packaging machines and packaging materials from all over the world, according to its sponsors. Particular stress will be placed, in discussions and exhibits, on the pre-packaging of perishable foods, especially fruits and vegetables. The show will occupy 25,000 sq. yds. in Amsterdam's RAI Exhibition Halls.



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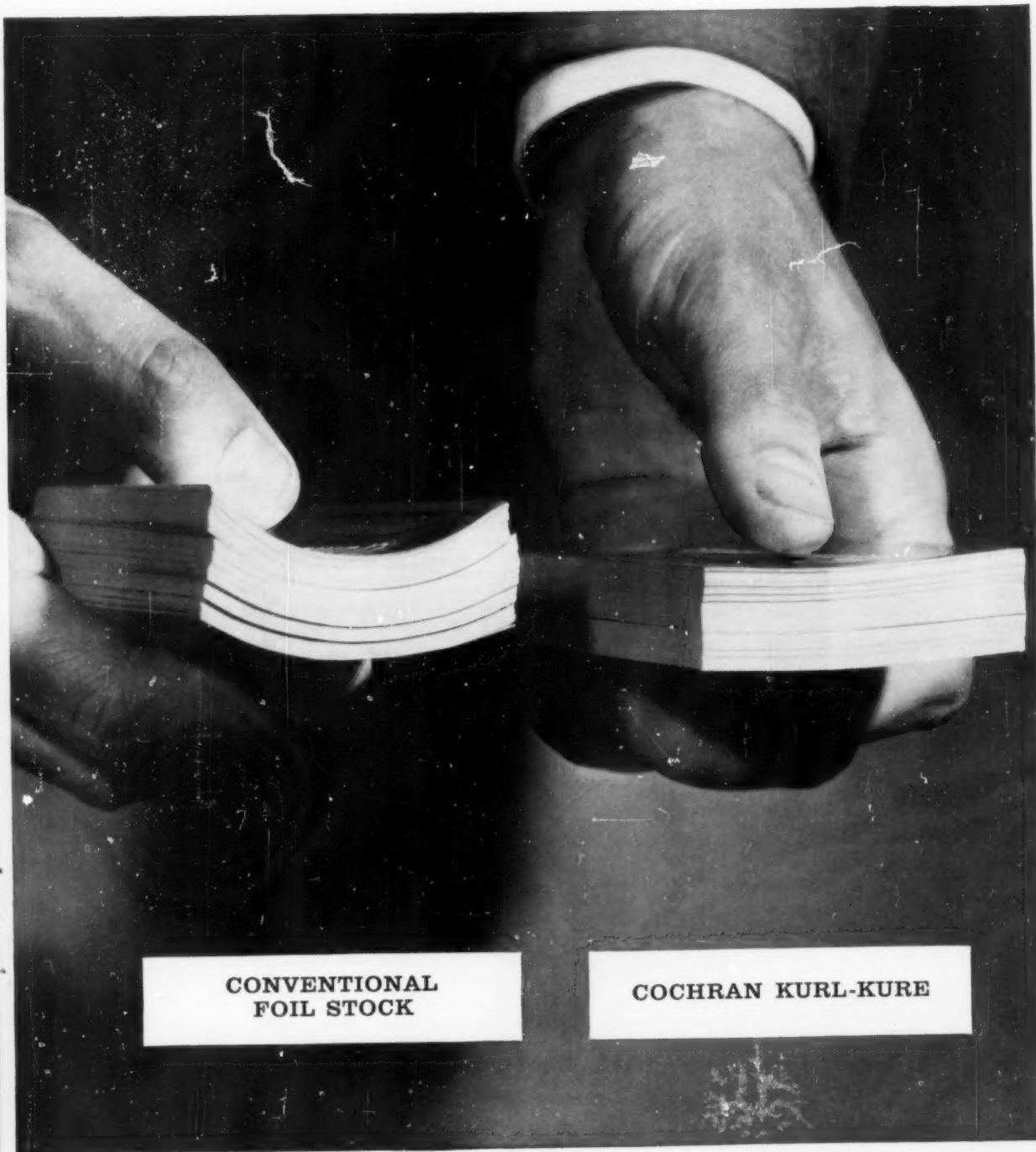
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U. S. patents digest

This digest includes each month the more important patents of interest to those who are concerned with packaging materials. Copies of patents are available from the U. S. Patent Office, Washington, at 25 cents each in currency, money order or certified check; postage stamps not accepted. Edited by H. A. Levey.

Vacuum Bag-Sealing Machine, Ralph S. Randall (to Vac-U-Pak Corp., San Francisco, a corporation of California). U.S. 2,833,096, May 6. In a vacuum bag-sealing machine, a platform adapted to receive an open-ended bag thereon and a hollow cover mounted for movement upon the platform to form a sealed chamber therewith.

Container Nesting Method, Charles H. Dixon (to Ex-Cell-O Corp., Detroit, a corporation of Michigan). U.S. 2,833,185, May 6. In a mechanism for nesting tapered containers, a conveyor, ejecting and supporting means, a receiving shelf, a magazine, nesting and counting means and means for ejecting the stack laterally from the mechanism.

Inflated-Cushion Sealed Container, Theodore Henry Marshall (to American Cyanamid Co., New York, a corporation of Maine). U.S. 2,833,398, May 6. A package comprising: a container for fragile articles comprising a glass bottle, a gas-filled, inflated, expandable, pneumatic, thermosealing-plastic sealed bag; a heat-sealed stem portion on said bag; fragile articles, and a protective closure over the neck of the bottle.

Covered Package with Releasable Initially Sealed and Locked Closure Flap, Frank J. Lefebvre (to Ivers-Lee Co., Newark, a corporation of Delaware). U.S. 2,833,401, May 6. A package comprising an approximately flat commodity container having two opposed walls with outer thermoplastic surfaces and a cover comprising a strip of flexible material having a fold providing a body portion with container-attaching flap.

Dredge-Top Dispenser Nestable with Like Containers, Joseph E. Drummond et al (to Kaiser Aluminum & Chemical Corp., Oakland, Calif., a corporation of Delaware). U.S. 2,833,452, May 6. In a nestable dispensing container of the type described, the combination of an upstanding wall, bottom and top portions and a centrally disposed and inwardly directed dish section.

Container, Charles D. Welshenbach (to West Virginia Pulp & Paper Co., New York, a corporation of Delaware). U.S. 2,833,456, May 6. A paperboard container having a tubular body of polygonal cross-section having vertical sides and vertical corners.

Folding Trays, Patrick A. Toensmeier (to The New Haven Board & Carton Co., New Haven, a corporation of Connecticut). U.S. 2,833,458, May 6. A tray which comprises: a bottom, a front wall and a rear wall hinged to the front and rear edges of the bottom, side walls hinged to the side edges of the bottom, connections, a platform wall and a reinforcing panel.

Set-Up Box and Blank for Forming Same, Kermit Greene (to Sherman Paper Products Corp., Newton Upper Falls, Mass., a corporation of Massachusetts). U.S. 2,833,459, May 6. A box blank of sheet material comprising a central panel, a plurality of panels connected thereto and provided with slits, tabs and scored lines.

Easy-Opening Folder, Lawrence V. Brom (to Container Corp. of America, Chicago, a corporation of Delaware). U.S. 2,833,461, May 6. A blank for a pilferproof folder formed of sheet material such as paperboard, said blank being cut and creased to provide a substantially rectangular principal panel.

Process for Packaging Continuous Strand, Warren Wendell Drummond et al (to Owens-Corning Fiberglas Corp., Toledo, O., a corporation of Delaware). U.S. 2,834,092, May 13. A method for the packaging of a continuous strand that comprises laying said strand in generally waveform spiral layers on the interior of a rotating cylinder surface.

Packing Machine, Gay M. Bonebrake (to Wm. Wrigley Jr. Co., Chicago, a corporation of Delaware). U.S. 2,834,165, May 13. In a machine for packing articles into boxes, the combination comprising: a box holder, means for successively placing empty boxes on the box holder, means for moving groups of articles from the conveyor to a box, means for driving two reciprocating rams in timed relation to one another, a plurality of unequally spaced feeler elements and a clutch responsive to the movement of any one of the feelers.

Packaging Machine, Joseph W. Fogwell et al (to Carbon Black Packaging, Inc., Bartlesville, Okla., a corporation of Delaware). U.S. 2,834,166, May 13. A machine for packaging fluent, powdery or pelletized materials comprising: a turntable and means for driving same, a plurality of stations, a bag carrier, means for supporting and opening a bag, means for guiding a charge of material into said opened bag and means for joggling to settle the contents.

Box-Flap Taping and End-Sealing Equipment, John P. Lopez (to Universal Corrugated Box Machinery Corp., Linden, N. J., a corporation of New York). U.S. 2,834,168, May 13. Equipment for sealing boxes having side and end flaps, comprising means to apply a length of tape to the top of such box, means to advance said box, a pair of pressing members and support means for said pressing members.

Multiple-Form Machine and Method for Making Paper Boxes, Harold J. Goss (to The International Paper Box Machine Co., Nashua, N.H., a corporation of New Hampshire). U.S. 2,834,

261, May 13. Apparatus for setting up boxes from flat box blanks of bendable material and having notched flaps.

Carton Set-Up Machine, John L. Ferguson et al (to Federal Paper Board Co., Inc., Bogota, N.J., a corporation of New York). U.S. 2,834,264, May 13. A machine for erecting and latching containers, comprising: a device engageable with opposite side walls of a flat, knocked-down container to spread the same to spaced parallel relation, a container-holding frame and a latching unit.

Flexible Container With Integral Sample Tube, Donna S. Tabbert (to Abbott Laboratories, North Chicago, a corporation of Illinois). U.S. 2,834,345, May 13. A container for receiving, storing and dispensing fluids comprising in combination: a flexible-walled body section of chemically inert and physically nonporous plastic, said body having a filling end and a bottom end.

Frangible-Tablet Packaging, Adolph Arthur Langer (to American Cyanamid Co., New York, a corporation of Maine). U.S. 2,834,456, May 13. A package containing a plurality of frangible tablets comprising: a thick rigid mold sheet of inert plastic material, said sheet having therein spaced uniformly tapered wall apertures extending therethrough from the top face to the bottom face of said plastic mold sheet.

Tape Package, Robert M. Dunning (to Minnesota Mining & Mfg. Co., St. Paul, Minn., a corporation of Delaware). U.S. 2,834,457, May 13. A holder for a member having a hollow, generally cylindrical core, the holder including a panel of paperboard, a support cut from said panel and including a series of angularly spaced members having substantially arcuate surfaces and a series of straps connecting said spaced members to said paperboard panel.

Collapsible Shoe Boxes, Charles A. Lee, Jr., et al (to Diamond Gardner Corp., New York, a corporation of Delaware). U.S. 2,834,460, May 13. In a package comprising a collapsible paperboard box having a tubular body and end closure flaps, a flat, self-sustaining handle element detachably secured to the inner surface of one of the walls.

Crown with Improved Liner, Leonard F. Olt et al (to Crown Cork & Seal Co., Baltimore, a corporation of New York). U.S. 2,834,498, May 13. A container closure having a liner composed of granular cork bonded by polyethylene.

Can Carrier, Carl T. Osterberg (to A. Geo. Schulz Co., Milwaukee, a corporation of Wisconsin). U.S. 2,834,508, May 13. A carrier including a pair of hingedly connected sections, including in

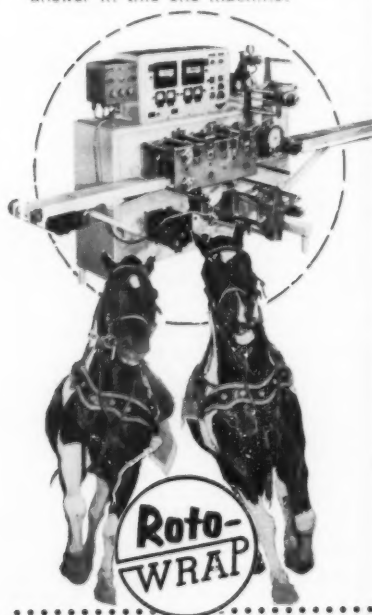
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succession: a handle panel, top, side and bottom panels and a securing flange connected by parallel fold lines.

Tamperproof Carton, Glenn E. Struble (to The Diamond Match Co., New York, a corporation of Delaware). U.S. 2,834,531, May 13. In a tamperproof carton, a bottom section having a bottom wall, front, rear and end walls articulated to said bottom wall and permanently secured together at their end edges, an outer cover member hingedly connected to the upper edge of said rear wall and an inner cover member.

Machine for Applying Tubular Bands to Bottle Tops and the Like, William E. Erickson et al (to Gisholt Machine Co., Madison, Wis., a corporation of Wisconsin). U.S. 2,835,088, May 20. In combination in a machine for applying closures to bottles and the like, a bottle-handling apparatus and a closure-handling apparatus.

Container, Elmer D. Sramek (to F. B. Redington Co., Chicago, a corporation of Delaware). U.S. 2,835,378, May 20. A carton formed from a single sheet of fibrous material comprising: a front wall, a rear wall, connecting side walls, a top and a bottom; said carton having a perforated line across the top thereof and a perforated line extending downwardly in three straight segments on each of its side walls.

Package and Method of Forming, Harry E. Engelson et al (to F. B. Redington Co., Chicago, a corporation of Delaware). U.S. 2,835,380, May 20. A package comprising a tubular liner made of a single sheet of material and containing a substance, the front wall having an inclined portion terminating at the inner end of a projection, said projecting end being bent to define a shelf at one end of the liner, an outer carton and an article which is placed inside the resulting chamber.

Carton Liner, Milton W. Herzog (to Delamere Co., Inc., a corporation of Delaware). U.S. 2,835,428, May 20. In combination with a shipping carton, a one-piece liner for removable insertion into the carton, which liner comprises a flat horizontal bottom portion, vertical side and end portions, with outwardly extending integral corner portions to space said walls inwardly from the corresponding walls of the carton.

Collapsible Container for Bakery Goods and the Like, Ernest C. Pellaton (to Fibreboard Paper Products Corp., San Francisco, a corporation of Delaware). U.S. 2,835,429, May 20. A multi-cell tray comprising a bottom, a pair of side walls, opposite end walls hingedly secured, a longitudinal divider and transverse cell-forming dividers.

Bag Closures, Ruby Jean Swartz et al (to Wingfoot Corp., Akron, O., a corporation of Delaware). U.S. 2,835,433, May 20. A bag filled and sealed at both ends, the bag being formed from a tubular blank of oriented film, the film being folded in to form a tuck at each end of one seal and then flattened, the other seal free from re-entrant folds.

Chest-Type Container, Clarence E. Felt et al (to General Mills, Inc., a corporation of Delaware). U.S. 2,835,594, May 20. A carton comprised of front, rear and connecting side walls with top and bottom end walls formed of flaps which are joined to the upper and lower ends of the front and rear walls and are folded

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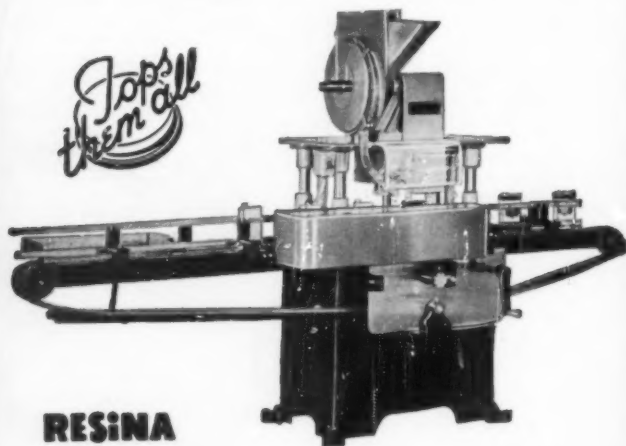
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U.S. patents digest

in overlying relation into the plane of the end walls and secured to each other.

Packaging Material, Peter P. Salatiello (to Olin Mathieson Chemical Corp., a corporation of Virginia). U.S. 2,835,595, May 20. A sheet especially adapted for packaging use, comprising a softened regenerated cellulose pellicle coated with a vinylidene chloride-methyl acrylate polymeric having a plasticizer incorporated therein.

Box for Dispensing Sheet-Wrapping Material, Walter A. Klein et al (to The Dow Chemical Co., Midland, Mich., a corporation of Delaware). U.S. 2,836,292, May 27. A dispensing box for packaging a hollow wound supply roll of sheet-wrapping material which comprises: a plurality of side walls and a pair of enclosing walls, roll-supporting means, means in one of said side walls forming an elongate, linear, slit-like outlet for said sheet-wrapping material, a contiguous pair of bendable, lip-like flaps formed by means tending to urge one against the other.

Sterile Ampoule Package, Richard H. Carroll (to Sterling Drug, Inc., New York, a corporation of Delaware). U.S. 2,836,320, May 27. A sterile ampoule package comprising: an outer container having a closed and an open end, a lip, an ampoule within the container, a plug with an extension provided with a hollow elongated chamber receiving the neck of the ampoule, and a sterilizing medium in the outer container.

Cap-Feeding and Positioning Means, Alfred W. Kinney (to American Can Co., New York, a corporation of New Jersey). U.S. 2,836,328, May 27. Mechanism for feeding and positioning container caps, comprising: a horizontal hopper having a vertical outlet for supporting a supply of caps on edge, withdrawing means, cap-turning and guiding means, a cap-supporting and feeding member and means for moving the feeding member of the mechanism in such a way as to feed the container cap into the proper capping position.

Telescopic Shipping Carton, Wilbert P. Daniels (to Green Bay Box Co., Green Bay, Wis., a corporation of Wisconsin). U.S. 2,836,338, May 27. A telescopic shipping carton comprising a liner having a bottom panel, side panels hingedly connected and panel flaps hingedly connected to side-panel margins which are at right angles to the hinged margins of the bottom panel.

Box, George C. Nydegger, Sunland, Calif. U.S. 2,836,341, May 27. A box comprised of a blank of flexible material and having a bottom wall, a pair of upright side walls—each of which has located at its top edge portion a longitudinal intumed flange—and a pair of upright end walls.

Carton, William A. Ringler (to Diamond Gardner Corp., New York, a corporation of Delaware). U.S. 2,836,342, May 27. A carton formed from a single blank of sheet material and including a lid as an integral part thereof.



Two totally different packages, yet each ideal for a similar product . . . **MOTH PREVENTIVES!** The tall package for moth crystals features the new plastic closure . . . so easily opened, yet a perfect and odorless seal when closed. Closures are available in a number of sizes and styles. **SPECIAL LINERS** safeguard against chemical deterioration and evaporation.

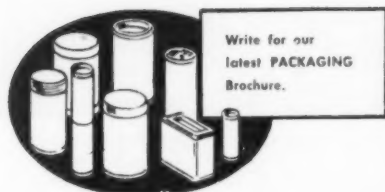
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of these properties, and its resistance to grease and bacteria, ALATHON is ideal for coating or laminating food packages. Cup and "Dixielite" coating process by Dixie Cup Division of American Can Company, Easton, Pa.



FLEXIBLE LIDS, molded of ALATHON 17 or 14, can be colorfully imprinted to feature special holidays. And the lids provide liquid-tight closures without added seals or inserts. Full-circle nesting ridge eliminates sticking, protects cups in shipment, speeds in-plant handling. Approximately 2,440 lids per hour can be automatically applied, thus increasing output, lowering labor costs. Molded by Mutual Plastic Mold, South Gate, California.

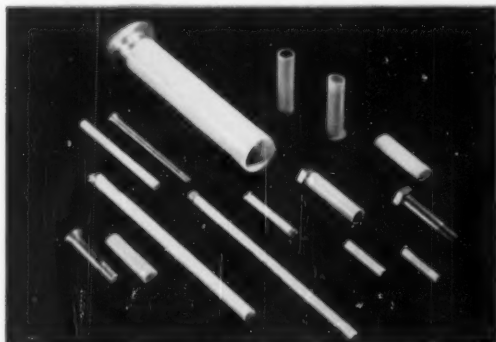


POWDERED CARPENTER'S CHALK is automatically "pillow-packaged" in cellophane coated with ALATHON 16. Package is designed so that color of chalk is clearly visible for easy identification. Special tear off corner permits easy pouring of chalk into reel. Coated for Evans Rule Co., Elizabeth, New Jersey, by Standard Packaging Corp., Clifton, New Jersey.

packages

Du Pont ALATHON[®]

POLYETHYLENE RESIN



PRECISION BOLTS are protected in shipment by opaque sheaths of ALATHON 10. These SPS Hi Ti Titanium aircraft bolts and high-strength fasteners need this extra protection in the thread area. And the cost of this new package is less than the paper previously used. Sheath extruded by H & R Industries, Nazareth, Pa., for Standard Pressed Steel Co., Jenkintown, Pa.



DISPOSABLE DRUM LINER made of ALATHON is lightweight, tough, and impermeable. It resists chemicals and moisture, and permits quick and easy removal of shipped material from container, eliminating cleaning by shipper before re-use. Extruded by Plicose Manufacturing Corp., Brooklyn, N. Y., for Protective Lining Corp., Brooklyn, N. Y.

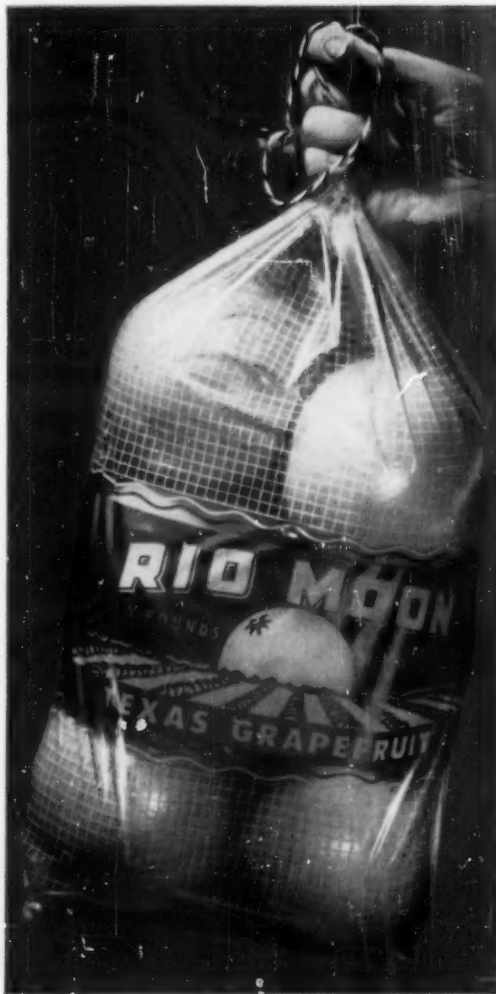
There is a family of ALATHON polyethylene resins, each tailored for a specific need. Consult with your supplier about selecting the ALATHON that best meets your requirements. Or mail the coupon, at right, to Du Pont.

POLYCHEMICALS DEPARTMENT



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STRONG ZIP-CORD[®] BAGS OF ALATHON allow easy handling and visibility of contents. Square-style gusset permits fruit to be alternately stacked, creating uniform packages, attractive displays. Cord emerges from double, heat-sealed thickness of film. Drawstring closure increases packing speeds. Fabricated by Shellmar-Betner Division of Continental Can Co.

*Registered trademark of the Continental Can Co.

E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept.
Room 258, Du Pont Building, Wilmington 98, Delaware

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Pre-packaging institute established

A school to teach the latest in-store packaging and merchandising techniques of meat and produce has been established for managerial and operational personnel of the retail food industry. Both one-day short courses and three-day sessions in meat and produce are being offered by the Thormac Prepackaging Institute at 3838 W. 43 St., Chicago, sponsored by the Thormac Packaging Corp. and Bageraft Corp. of America, both of Chicago.

The institute will offer professional courses that will be conducted by instructors from Michigan State University and Purdue University. Almost \$30,000 worth of equipment and supplies have been donated to

the institute for practical instruction and meat packers are providing various cuts of meats for on-the-spot classroom demonstrations.

The institute aims to serve personnel in supermarkets, voluntaries, cooperatives and chain food stores throughout the country. Classes will be limited to 40 students each in order that the equipment can be used effectively for demonstrations. Facilities include a walk-in cooler, cutting tables, meat saws, grinders, scales, refrigerated cases, etc. Tuition for the one-day courses is \$15, while that for the three-day sessions is \$60.

Inquiries should be directed to H. R. McCleary, institute director.

Rules of cautionary labeling

[Continued from page 111]

of law and a liberal dose of advertising sales are most helpful. Time spent finding personnel so equipped is bound to pay off.

The label writer must have a mind for detail. He should have demonstrated ability to get the facts. He should reach logical, sound conclusions. He should be able to defend these conclusions against whatever comes. But above all—he must like his job. A good label is seldom written by an individual with little interest in it. You either like label preparation or you don't. Most people don't. The rare person who does is a valuable individual.

Where is warning label composition best placed in an organization chart? There is no one preferable location. Much depends on how complex the company is. It may best be a part of other label work. However, if this is done by an advertising or other outside agency, precautionary composition may be a part of legal counsel or of the manufacturing group handling general packaging problems. But wherever it is done, there should be direct contact with all new-product development. This phase of product history usually provides much of what is needed to establish label content, proposed uses, frequency and type of exposure, actual behavior in use. Also this early experience firms the decision that a warning label is or is not required. If one is needed, it allows the maximum interval to con-

sult outside sources or to have toxicity tests made.

Warning-label writing must not be isolated from sales. Many label deficiencies are shown up by product complaints and marketing experiences. Changes in label wordings may eliminate some of the former and assist in the latter. New uses may require label changes due to unanticipated risks. Or label changes may be required by new legislation or by entrance into a new market geographically. The latter will continue important until federal labeling legislation imposes more-uniform requirements.

Warning labels are always a balance between theory and practical considerations. Marketing experience helps in such decisions.

It hardly seems necessary to urge that a label file be kept. It will serve all units of a company. It will aid in seeing all chances for label consolidation and speed up the writing of new labels. Also, elements required for a new label may be located in the file.

Along with all this should come an attitude toward precautionary labeling. It is not a "necessary evil." It is today an essential part of marketing philosophy. It is a hard-headed, dollars-and-cents phase of marketing which insures public favor, creates good word-of-mouth advertising which cannot be bought otherwise. It is insurance on the future of a company's products.

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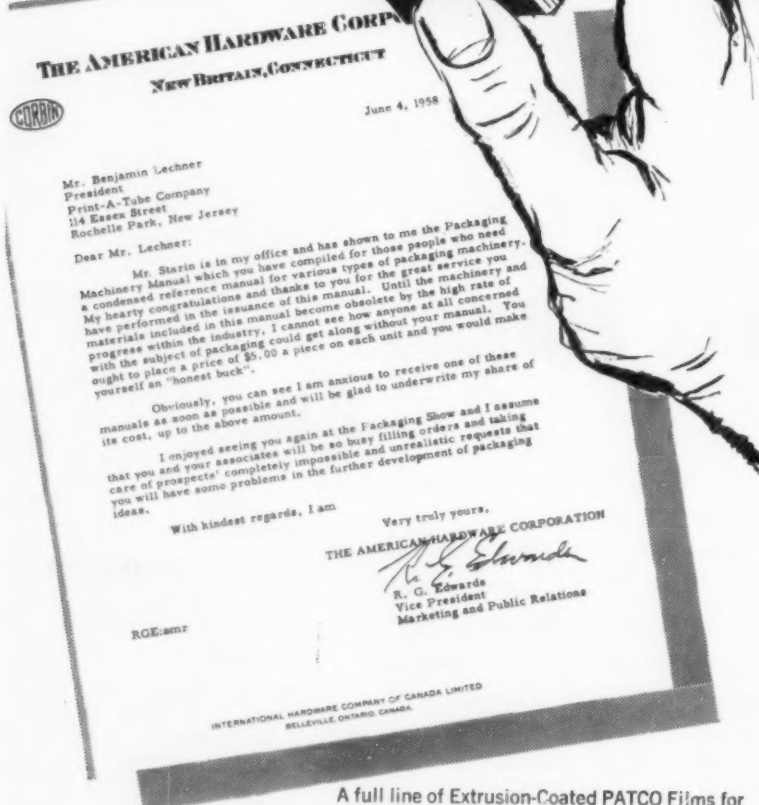
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NEW BRITAIN, CONNECTICUT



June 4, 1958

Mr. Benjamin Lechner
President
Print-A-Tube Company
114 Essex Street
Rochelle Park, New Jersey

Dear Mr. Lechner:

Mr. Starin is in my office and has shown to me the Packaging Machinery Manual which you have compiled for those people who need a condensed reference manual for various types of packaging machinery. My hearty congratulations and thanks to you for the great service you have performed in the issuance of this manual. Until the machinery and materials included in this manual become obsolete by the high rate of progress within the industry, I cannot see how anyone at all concerned with the subject of packaging could get along without your manual. You ought to place a price of \$5.00 a piece on each unit and you would make yourself an "honest buck".

Obviously, you can see I am anxious to receive one of these manuals as soon as possible and will be glad to underwrite my share of its cost, up to the above amount.

I enjoyed seeing you again at the Packaging Show and I assume that you and your associates will be so busy filling orders and taking care of prospects' completely impossible and unrealistic requests that you will have some problems in the further development of packaging ideas.

With kindest regards, I am

Very truly yours,

THE AMERICAN HARDWARE CORPORATION
R. G. Edwards
R. G. Edwards
Vice President
Marketing and Public Relations

RGE:smf

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PI Forum plans

Twelve technical sessions and the Annual Awards dinner will highlight the Packaging Institute's 20th Annual Forum, Edgewater Beach Hotel, Chicago, Oct. 13-15.

The technical sessions will include subjects of current and immediate interest to packagers in general—production, merchandising, research and development—as well as subjects of interest to specific industries—drugs and pharmaceuticals, bag and industrial packaging, printed cartons, foods, hardware, closures and flexible packaging.

Winners of PI's 1958 Corporate Award and Professional Award will be announced at the Annual Awards dinner, scheduled for Tuesday, Oct. 14. These awards are intended to constitute the highest honors for technical achievement in packaging that can be conferred on individuals or companies in this country, according to Roger V. Wilson of Continental Can Co., chairman of the PI Awards Committee.

More force for Mirro

[Continued from page 115]

were in accordance with the new format and color scheme. The new Mirro trademark now appears on display boxes for all Mirro ware, including toys.

The newly designed display packages feature a strong, transparent polyester picture window which permits the customer to see the merchandise, yet discourages pilferage.

The boxes, like the labels, have a protective varnish coating that keeps them smudge free and adds snap to the colored inks.

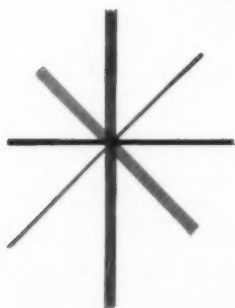
Time was needed for depleting stock of old labels and for preparation of artwork for new labels, booklets, brochures and Mirro advertising pages. Today dealers throughout the country are receiving Mirro products bearing the attractive new labels and packaged in modern, colorful display boxes with their "shopper-stopping" show windows.

The new Mirro labels and packages have brought enthusiastic response from distributors throughout the country. This in itself, the company feels, is assurance of a more dynamic and intensive merchandising job that will increase sales of the entire Mirro line.

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Garden 5-5850

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EQUIPMENT • SUPPLIES • SERVICES

FIBRE CANS. Literature illustrates line of metal-capped, all-fibre, lined and unlined fibre cans. Includes data on can construction and on such dispensing devices as pouring spouts, plugs, and sifters. The Cleveland Container Co. (H-850)

UNIT PACKAGING. 6-page illustrated booklet covers the features and specifications of a line of automatic package-forming, filling and heat-sealing packaging machines for foods, pharmaceuticals, and flexible materials. Roto-Wrap Machine Corp. (H-851)

COLLAPSIBLE TUBES. Catalog gives specifications and describes uses for tin, lead, aluminum, single and multi-use, lined and unlined collapsible tubes and shells, and a variety of special-purpose tube openings, strips, closures, applicators, metal can spouts. Standard Collapsible Tube Co. (H-852)

CYLINDER PRINTER. 4-page illustrated leaflet shows line of silk screen printing machines for labeling or decorating small glass and plastic bottles, metal tubes and other cylindrical objects from 3/8 to 6 inches in diameter, and for printing cans and drums from 5 to 55 gallon capacity. Photo Process Screen Mfg. Co. (H-853)

"PILLOW" PACKAGER. 4-page folder describes automatic packaging machine for solids, powders, liquids or granules. Machine forms, fills and seals up to 240 single or double-walled pillow-type packages per minute in cellophane, heat seal papers, laminates, polyethylene, and saran. Lynch Corp. (H-854)

PACKAGING NEWS. First issue of new quarterly house organ pictures and reviews developments in plastic packaging materials and methods. Includes discussion of the uses and future of polyethylene resins. E. I. du Pont de Nemours & Co. (H-855)

PLASTIC BOTTLE BLOWER. Illustrated 4-page brochure presents features of an automatic machine for making finished bottles up to one liter, doll heads and other hollow items from all thermoplastic materials. The Blow-O-Matic Corp. (H-856)

AEROSOL TESTER AND VENTER. Illustrated 4-page brochure describes features of an automatic machine for testing pressure on up to 60 cans per minute, venting gas, and automatically rejecting faulty aerosol containers. The Robins Engineering Co. (H-857)

PACKAGING FILMS AND MACHINERY. Illustrated 16-page booklet discusses the significance of "Cryovac" plastic packaging films, packaging machinery, sales services, research, etc., to consumers, retailers, packers, processors, and purveyors of food products. The Cryovac Co. (H-858)

TENSION CONTROL. Illustrated 16-page booklet describes features of lines of controlled tension winding and unwinding installations. Includes discussion of principles of center shaft winding. Hobbs Mfg. Co. (H-859)

POUCH FORMING MACHINES. Illustrated 4-page booklet describes features of a line of automatic machines that form flexible, two-dimensional packages around the products from roll stock, then heat seal, and cut off, at rates up to one package per second. Pak-Rapid, Inc. (H-860)

ROTARY CAN SEALER. Illustrated bulletin presents features of an automatic rotary can sealer designed for direct coupling to a filling machine. Automatically selects inserts and reams 1 1/4" diameter lids into "F" style gallon cans, at up to 100 a minute. Resina Automatic Machinery Co., Inc. (H-861)

CONTINUOUS LABELER. Illustrated 4-page brochure presents construction and operational features of a line of non-stop dual label feed machines for hot-glue labeling of cans, glass, cartons. Includes specifications. Burt Machine Co. (H-862)

SHORT CASE SEALERS. Illustrated 4-page folder describes features of lines of automatic and semi-automatic top and bottom short case sealers, designed to handle sizes up to 20" x 16" x 18". Includes specifications, diagrams, optional equipment. A-B-C Packaging Machine Corp. (H-863)

PORTABLE IMPRINTING MACHINE. 4-page brochure pictures and describes features of a portable, automatic machine for imprinting code-dates and other legends on bottoms of jars, bottles, cans, paper containers, etc., at speeds up to 600 units per minute. Adolph Gottscho, Inc. (H-864)

MECHANIZED SILK SCREEN PRINTING. Illustrated 4-page booklet discusses uses of high-speed, production-line screen process printing in packaging. Describes special effects attainable, production facilities, services. Color Reproductions, Inc. (H-865)

BAG SEALER-GLUER-CLOSER. Illustrated 4-page folder describes construction and operational features of a machine for double-folding, heat-sealing, and gluing automatic, square, and flat paper bags to produce sift-proof closures. Includes specifications. George H. Fry Co. (H-866)

CUTTING MACHINES. Illustrated folder describes features of lines of semi-automatic and automatic single-knife cutting machines. For intermittent or continuous cutting operations on light or heavy materials. Oscar I. Judelson, Inc. (H-867)

AUTOMATIC SCALES. 4-page booklet presents operational features, specifications of a line of automatic scales designed for coffee packagers. Scales feature mechanical feeders and packaging units mounting 4, 6, 8, and 10 head weighing assemblies. Consolidated Packaging Machinery Co. (H-868)

AEROSOL PACKAGING EQUIPMENT. Illustrated 4-page booklet describes features of an aerosol pressure charging unit; an automatic, two-stream filling machine; a rotary pressure vacuum filler; a compressed air bottle cleaner; and other aerosol packaging machinery. The Karl Kiefer Machine Co. (H-869)

CUTTING MACHINE. Illustrated folder presents operating features of a cutting machine for register sheeting or general purpose use. Handles widths up to 46 in. at speeds exceeding 1,000 ft. per minute, depending on paper type and printed mark. The Clark-Aiken Co. (H-870)

INDUSTRIAL STERILIZERS. Illustrated 4-page brochure describes features of lines of automatic ethylene oxide sterilizers for bulk or packaged heat- or moisture-sensitive materials. Scientific and Industrial Div., American Sterilizer. (H-871)

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PACKAGING EQUIPMENT. 64-page condensed catalog pictures and describes lines of electric vibrators, dry feeder machines, weighing equipment, vibratory parts feeders, and other materials handling equipment. Includes specifications, list of sales agents. Syntron Co. (H-872)

PLASTIC CONTAINERS. 4-page folder illustrates and describes lines of stock and custom-extruded acetate, butyrate, high impact styrene, propionate, and high density polyethylene transparent and opaque containers; butyrate sleeves and scabbards; and semi-rigid cellulose acetate butyrate tubing and vials. Extruded Plastics, Inc. (H-873)

LEVEL CHECKERS. Illustrated 4-page folder describes features of a line of automatic X-ray inspection devices for detecting height-of-fill variations of as little as 1/32 in. in sealed, opaque containers on conveyor lines, at rates up to 900 per minute. General Electric. (H-874)

PVC WRAPPING FILM. 6-page folder describes the advantages of a transparent, sunlight and tear-resistant polyvinyl chloride wrapping film for various products, excluding food. Includes specifications. The Goodyear Tire & Rubber Co., Inc. (H-875)

PACKAGE FILLING MACHINE. Illustrated 4-page brochure describes features of an adjustable machine for electronically counting headed articles such as screws, bolts, tacks, nails, etc., and dropping them into bags, trays or boxes. Batchelder Engineering Co. (H-876)

VINYL PACKAGES. 4-page brochure describes and pictures lines of flexible, transparent or opaque decorative reusable vinyl packages. Lists products lending themselves to this packaging material. Includes sample. Simplex Binder Co. (H-877)

AEROSOL PRESSURE FILLING EQUIPMENT. Illustrated 4-page leaflet describes lines of product-fillers, purgers, charging units, and crimping equipment for high-speed, semi-automatic, and laboratory aerosol packaging. Includes accessories. JG Machine Works. (H-878)

ADHESIVES. Illustrated 19-page booklet describes consumer and industrial uses of this company's lines of adhesives, dextrans, starches, chemical products. For packaging, food, pharmaceutical, paper, and other industries. Morningstar-Paisley. (H-879)

AGITATOR PUMPING SYSTEMS. Illustrated 5-page folder describes construction and operational features of lines of pumping systems for flexographic and rotogravure inks, coating materials, varnishes, abrasive slurries and other liquids which must be kept in circulation. Graymills Corp. (H-880)

SHIPPING CORROSIVE LIQUIDS. Technical report describes and pictures a seamless polyethylene bottle and corrugated shipper for corrosive and other liquids. Includes specifications, case study of electrolytic fluid, list of polyethylene-compatible products. Hinde & Dauch. (H-881)

VISCOSITY APPARATUS. Illustrated 4-page brochure describes construction and operational features of an apparatus for maintaining predetermined viscosity by automatically adding thinner to inks, paints, coating materials, other liquids. Includes diagram. Graymills Corp. (H-882)

PLASTIC CONTAINERS. 8-page booklet pictures and describes lines of colored, transparent and opaque, cylindrical plastic vials and tubes for a variety of small-item packaging requirements. Lusteroid Container Co., Inc. (H-883)

AEROSOL PACKAGING. Illustrated 14-page booklet discusses the principles and sales

advantages of aerosol packaging for products that can be sprayed, brushed on, daubed, poured or dusted. Includes lists of propellants; test and volume contract fillers. General Chemical Div., Allied Chemical Corp. (H-884)

SKIN PACKAGING. Illustrated 4-page folder describes a line of automatic skin-packaging, blister and vacuum forming machines with up to 12 dry cycles per minute. Includes specifications, diagrams. Comet Industries. (H-885)

FIBREBOARD BOX CLOSURES. Illustrated 16-page manual evaluates hand and machine gluing, taping, stapling, and wire stitching of fibreboard boxes. Presents advantages of using wire and wire-stitching machinery. Acme Steel Co. (H-886)

CAN LINE EQUIPMENT. Illustrated 4-page bulletin describes operational features of lines of machines for automatically feeding, weigh-filling, packing, and ejecting one-half or one pound cans of dry granular, crystalline or powdered materials at up to 200 cans per minute. B. F. Gump Co. (H-887)

SLITTING-REWINDERS. Illustrated 4-page folder describes features of lines of slitter-rewinders for plastic film, laminated foil, tape, glass cloth, paper. Machines available for shear cut, razor blade, rotary burst or score cut type slitting. John Dusenberry Co., Inc. (H-888)

HEAT SEALER. Illustrated data sheet describes features of a pneumatic machine for heat-sealing bags, pouches, envelopes, interliners, barriers, etc., made of Kraft and scrim-backed laminates, cellophane, foil, ploidin, etc. Wrap-Ade Machine Co., Inc. (H-889)

MARKING MACHINERY. 4-page brochure discusses lines of automatic, semi-automatic, and hand-fed marking presses operated by air, electric motor and by hand. For trade-marking, decorating and identification. Also discusses services for marking in wide variety of colors, designs. Peerless Roll Leaf Co., Inc. (H-890)

NET WEIGHER. Illustrated bulletin presents features, specifications of a table model, single scale net weigher for operations where short runs and frequent size changes are common. For weighing dry, semi-free flowing products; filling bags, boxes, jars, cans, and cartons. The Woodman Co., Inc. (H-891)

FIBRE DRUMS. 4-page bulletin contains new contents weight listings, in addition to information on bulk packaging of dry, semi-liquid and liquid products in fibre drums. Includes list of manufacturers. Fibre Drum Manufacturers Ass'n. (H-892)

CLOSURE CATALOG. Illustrated closure catalog for glass packers discusses lithography and design, types and styles, metal coatings, closure liners, services and facilities, color limitations, cost factors, new developments, future possibilities, and mass production problems involved in proper selection of glass package caps. Ball Bros. Co., Inc. (H-893)

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Polyethylene progress in past six months

[Continued from page 79]

suppliers, packaging-machinery manufacturers and packagers—particularly in the bread-wrap and cigarette fields—on a variety of cast polyethylene films produced by three extruders: East Texas Plastics Co., Deerfield Plastics Co., Inc., and a third company which declines to be identified.

Also revealed by U.S.I. at the show was a new blowing technique, using a new resin, that enables polyethylene film to be produced in gauges as thin as two-tenths of a mil—a film so light that it floats in the air like a cobweb. No practical applications are immediately foreseen for this material, but its development dramatizes the ability of suppliers to tailor resins and extruding techniques to almost any packaging need.

What about polypropylene? Quoting again from the Harvard University report, "It is difficult not to become over-enthusiastic about the future for polypropylene." But because the material is new and untried, it is difficult to pinpoint just where the material will fit in film overwrapping.

Undoubtedly its great tensile strength—reported to be 50% greater than that of the average polyethylene—will lead polypropylene directly into wrapping applications. Transparency approaching that of saran—seen in samples of a bi-oriented polypropylene film exhibited at the AMA Show by Minnesota Mining & Mfg. Co. and in other sample lots of regular polypropylene made by Montecatini (Italy) and Hercules Powder Co.—should make this material particularly suited to transparent packages requiring high merchandising appeal. Known barrier properties range from good to excellent. More will be heard about this material in the next few months.

It will be noted that mechanical developments directly related to the newer types of films appear to be coming from the film manufacturers. But the packaging-machinery industry has been hard at work on solutions of the basic problems of handling soft, thermoplastic films in overwrap equipment and early results of their work were seen in March and May at the Atlantic City and New York shows.

Three new polyethylene overwrappers show definite increases in speed—a paramount problem.

One is a side-film-feed machine with a unique sealing section, developed by Battle Creek Packaging Machines, Inc., and reported able to handle not only low-, intermediate- and high-density polyethylene films, but most of the other thermoplastic and non-thermoplastic films, plus papers and foils, at speeds which have been rated as high as 75 packages per minute.

To achieve this objective, the machine combines old and new techniques. The film-feed's single belt and overhead rollers can pull limp films. A spring-tension brake and static eliminators control the material. The three-lock folding and package-feed sections are the same as those used on previous overwrappers built by this company, with the exception of sprayed-on Teflon coatings for various metal parts that contact the film. A machine with a different wrapping section is also available for under-fold flaps. A special tack-sealer bar at the end of the folding section secures the bottom of the package and stabilizes the wrapper.

It is in the sealing section, however, that the greatest change has occurred. The patent situation prevents a full description of this section. But, in general, the packages are conveyed past the fixed heating plates by spring-mounted, glass-cloth pads that are synchronized with the package feed and grip the package with adjustable pressure. A refrigeration system quickly reduces latent heat in the seal, enabling the polyethylene to regain tensile strength.

A second new machine, which demonstrates some of the basic technique now seemingly established for handling and sealing polyethylene, was developed and shown by Package Machinery Co. Here, a short, double-belt film feed and a package or product elevator are combined with slit-plows to form an overwrap with two-point folds. The bottom seal in this package is formed by a reciprocating thin-line bar sealer.

Overhead, chain-driven bars push the packages through the sealing section, which is composed of three pairs of spring-mounted sealing

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plates. These plates, providing 30 in. of sealing surface, are graduated in temperature over a 40-deg. spread, with the hottest coming first. A pair of 20-in.-long, water-cooled plates chill the seal.

Though this machine is rated at only 65 packages per minute, company engineers say it actually did between 80 and 85 in test runs.

Another possible overwrapper for polyethylene film was suggested by a bundling machine shown by the Crompton & Knowles Packaging Corp., which already is marketing one type of overwrapper that handles this material. The bundling machine operates on cellophane, but can be converted to polyethylene, according to company engineers, by the addition of a belt-sealing section.

A recent change in the polyethylene overwrapper made by Haysen Mfg. Co., previously described,⁹ has been a broadening of design that enables the latest models to handle not only polyethylene, but Vitafilm and cellophane as well.

Such is the present state of overwrapping with polyethylene. Some new solutions to ticklish problems. Not all the answers. Still, impressive progress in a very short time.

⁹See "What About Polyethylene?" Part III, MODERN PACKAGING, Feb., 1958, p. 116.

Shelf-life determination

[Continued from page 124]

permeable packages are used and the diffusion resistance is on account of low porosity, not excessive. When $P_{\text{package}} < 10^2$ for the packaged product and especially with water-vaporproof packages, the powdered product will show no noticeable moisture gradient.

Whereas for the first case $q=Q/A$ is a value for the quality of the package, for the second case we have $1/b=Q/V$, or better still: $b=V/Q$ as a measure for the quality since the moisture is uniformly distributed throughout the contents. This distinction is of value because it shows that a square bag, even with a higher q , may be more advantageous than a flat bag. The form factor plays a certain but, in general, not a decisive role. If the permeation is entirely due to the surface, we

have for a cube $b = \frac{a}{6q_A}$ and, if it is due to passage at the seams, we

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have $b = \frac{a^2}{9qs}$. Or in other words,

when water-vapor permeation occurs through the seams, the quality of the package depends more on the size of the package than in cases where permeation takes place through the entire surface of the package. Thus, especially for small packages, the seams have to be especially tight.

For the simpler case of uniform moisture throughout the packaged substance, the shelf life will be dependent on whether a deterioration will occur abruptly when a certain critical moisture is exceeded (I) or whether the keeping quality increases or decreases continuously with the moisture content (II). Products have not only different critical moistures, they differ also in the time it takes for the moisture change to effect a deterioration (Fig. 6). With some products there is no deterioration below the critical moisture (I). This holds especially for products which are susceptible to lumping, softening or microbiological spoilage. The permissible shelf life is given by the relation

$$t = \frac{Q}{A} \left(\frac{\Delta p}{q} \right) \int_{X_i}^{X_p} \frac{dX}{p_{Da} - f(X)}$$

where q is the value for the entire package calculated according to the precepts of section 2 and Q is the dry weight of the contents (Fig. 6).

The numerical value of this integral is obtained by drawing the sorption isotherm $p = f(X)$, determining $p_{Da} - f(X)$ for small intervals ΔX and computing the respective $t_1, t_2, \dots, t_{\text{permissible}}$ (Fig. 7).

If the permissible moisture content cannot be reached in time, packages with identical contents may be compared by determining the inclination K of the straight line representing Paine's relation

$$\log_e (X_{\infty} - X) = \pm Kt + \log_e (X_{\infty} - X_0)$$

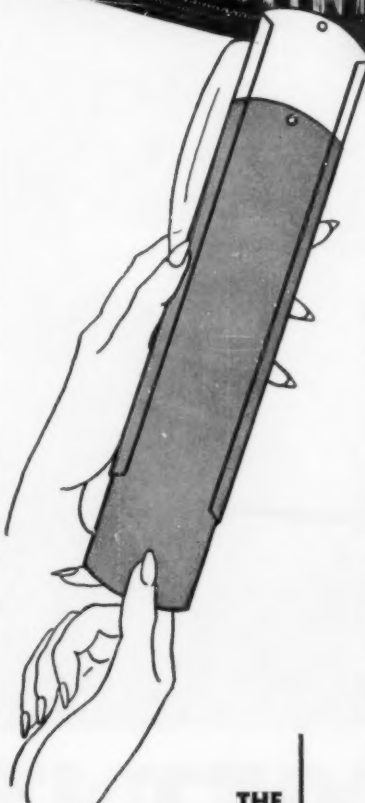
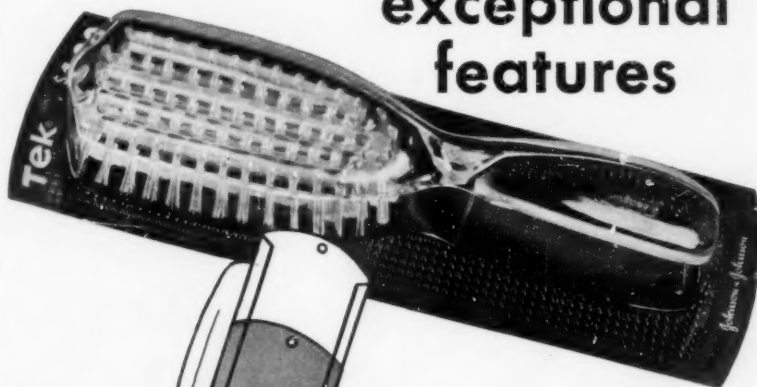
where X_{∞} = equilibrium moisture of contents at ambient humidity. This evaluation method may be advantageous in cases where one wants to find out which package or packaging method is to be preferred among several proposed ones.

By this method, we checked packaged biscuits produced in several European countries. We found that with about the same packaging ma-

[Continued on page 176]

Johnson & Johnson

chose this "SLIDEPLAX" package because of these
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Plaxall's exclusive process brings to plastic forming the precision of metal stamping.

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NET WT. 100%
3 POUNDS

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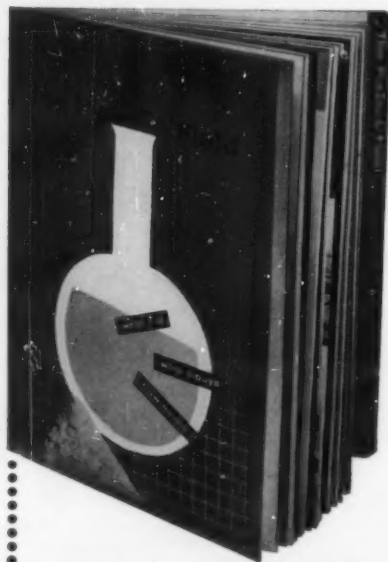
No greasy packages to spoil sales when you use AVISCO cellophane. For cellophane is not only greaseproof, but it heat seals easily and securely to prevent grease leakage. Even more, cellophane never clouds on contact with grease—always remains sparkling clear to create greater appetite appeal and build extra sales. AVISCO cellophane is also low in cost and gives top performance on packaging machines. It's your best choice for packaging foods with a high grease content—or any other foods, for that matter.



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[Continued from page 173]

terial shelf life at 68 deg. F. $\varphi = 65\%$ varied in the proportion 10:1.

To calculate the shelf life of a package containing a product subject to serious changes in time (II), it is recommended to use a method analogous to that of *Bigelow* for the calculation of the sterilization value of cans. For this purpose it is necessary to have available the curves of shelf life as a function of X and of X within the product as a function of time.

More complex is the determination of moisture distributions which vary locally and temporally. For this purpose, use was made of Schmidt's tangent method to determine the one-dimensional moisture transfer for two extremes of packaging materials with a comparatively high and a comparatively low water-vapor permeation coefficient. Finally, the three-dimensional moisture distribution was determined at the center of the faces, the corners and the edges (Fig. 8).

GB Packaging Centre

Britain's new Packaging Centre, a permanent exhibition and information center covering every aspect of packaging and packing, was formally opened last month by the Right Hon. Sir David Eccles, KCVO, M.P., president of Great Britain's Board of Trade. The Centre, located in the heart of London's West End at 50 Poland St., is directed by Philip Andrew, who helped found the British Institute of Packaging.

In addition to the many displays, which will be changed at intervals, the Centre will operate an Information Bureau stocked with sales and technical literature of all firms taking part in the exhibit. A free reference library containing books and periodicals on packaging from all parts of the world is available as a source of information and ideas. A Packaging Club lounge, and board and conference rooms are maintained on the premises.

The Centre is deliberately international in character and its facilities are freely available to foreign visitors as well as British packagers. To make its influence felt on an international plane and to assist British exports, the Centre proposes to take part in many overseas packaging exhibitions.



*Selling via multiple rack
display cartons?*



Then remember...

...America reaches for MICHIGAN Cartons!

YOU can rely on helpful personal service from your Michigan Carton salesman

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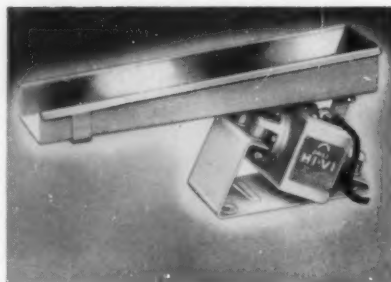
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Here's the vibratory feeder that's way out front for quality, price, performance. Based on entirely new concepts in design and construction materials it provides automatic, accurate, controlled feed of bulk materials. Use it for spreading, sorting, aerating, cooling, drying, sifting, separating, proportioning, etc. Gives a smooth, level flow to all bulk materials, variable from ounces to tons per hour. For hot, dry, dusty, lumpy, abrasive lines. Quickly pays for itself in increased production; lower maintenance and operating costs.



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These are the features YOU asked for in a vibratory feeder!

Electro-permanent magnetic drive; has lifetime powered

Alnico V magnet, needs no rectifier—just plug or wire in

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Steel containers

[Continued from page 89]

construction and dimensions in common types of steel drums and pails. The SSCI, in cooperation with the Packaging Institute and various vertical trade associations, has undertaken this project to reduce wide variations in container specifications so that industries can use the same basic drums and pails and thus improve general filling, handling and shipping procedures, and also enable container manufacturers to speed production and delivery.

Recommended standards, covering 17 categories of containers ranging from 5-gal. pails to 57-gal. drums, have been drawn up. Ten of these are now being published by the American Standards Assn.

While specifications are being settled for standard steel containers, special pails and fittings are being developed to broaden their use.

The newest fittings include combined closures and pour spouts designed to be clinched on the pail in the packager's plant. These speed production for both packager and pail manufacturer, and should provide diverse pouring mechanisms to meet specific product needs.

Now, manufacturers can cut a standard hole in the head of a pail with dies supplied by the fitting manufacturer. This hole and flange are covered with an inexpensive dust cap and the pail is shipped to the packager. Completely assembled fittings with retractable spouts, polyethylene pour tubes or other desirable attachments are obtained from pail or fitting manufacturers and applied in the packager's plant with inexpensive hand or pneumatic clinching machines.

Among the other interesting specialties announced recently are: a pail with fibreboard core for carrying coiled wire, an open-head pail with lug cover that screws into locked position and a galvanized taper pail that has high re-use value for dairy cleaning compounds.

Also new is a modest trend toward palletizing pails in inexpensive and disposable fibreboard trays. While these carriers are not strong enough for re-use, they do speed handling and carloading for the manufacturer and likewise reduce manual labor for unloading and moving in the packaging plant.

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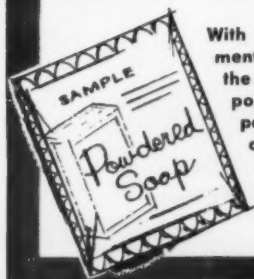
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NEW! PACKETTES!



With our new equipment, we can give you the new increasingly popular **PACKETTE** packages in either cellophane, foil, polyethylene film, or kraft. Write today.



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The Modern Tray- for the Frozen Food Package!

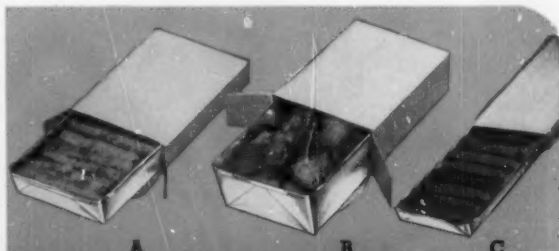
Straight sided rigid foil pans or trays permit full package so compact that they are profitable items to handle in retail stores. The full package pleases the housewife and builds repeat sales. "American" straight sided trays permit packages that save counter space, freezer capacity, trucking space and general storage space and stack neatly . . . All money saving features!

They handle easily on your automatic conveyers, filling machines, wrapping machines, etc.

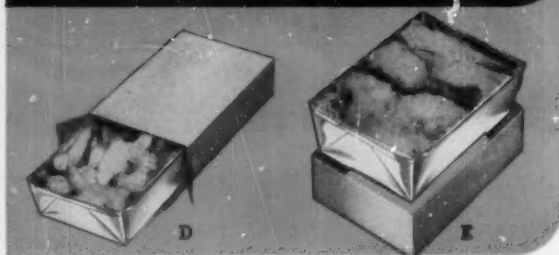
Let us help you develop the best package for your product. We can easily fit your present package or a new design.

SIZES $\frac{1}{8}$ " to $1\frac{1}{4}$ " deep and from $3\frac{1}{2}$ " x $3\frac{1}{2}$ " to 11" x 11", all without die cost to you.

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MOST MODERN PACKAGING and food processing machinery. At Wonderfully Low Prices, 3—Hayssen Model F Compaks with net weight scales, bulk and dribble feeds, electric eyes. Installed new in 1955. 2—Package Machinery Model C Transwraps, with net weight scales, bulk and dribble feeds, electric eyes. Installed new in 1955. Stokes & Smith Model BS Stokeswrap, auger feed, electric eyes. Scandia Model SFS6F high speed automatic wrappers with electric eyes. 1—Ceco Model 40-9 1/2 TT Automatic Adjustable Cartoning Machine. Hayssen Wrappers, all sizes. Package Machinery Models FA, FA2, and FA4 Wrappers with and without electric eyes. 1—FA2 Wrapper complete with electric eye and tear tape unit. In like new condition, used for samples only. 3—Package Machinery Model FA (Palmer) Machines—several with rotary feeds. Wrap King Model DW2 Wrappers with or without cardboard feed and labeling attachments. 1—Pneumatic Scale Automatic Carton Feeder, bottom sealer and top sealing units with interconnecting conveyors. Ceco Model A3901-12 Cartoning Machines with compression unit. Complete details and prices available on request, Union Standard Equipment Company, 318 Lafayette Street, New York 12, N.Y. Phone: CAnal 6-5334.

FOR SALE—BARTELT PACKAGING machine complete with meter auger filler, magic-eye, vacuum pump, 3" bag clamps. Excellent condition. Machine in operation. Reasonable price, available for immediate delivery. Reply Box 931, Modern Packaging.

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POLYETHYLENE SCRAP WANTED. Film, lumps, rejects, reground and surplus lots. Top prices paid. M. Koenig & Sons, Inc., 758 Humboldt Street, Brooklyn 22, N.Y. Telephone: EVERgreen 9-1800.

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MANUFACTURER WITH SEWING and heat-sealing facilities producing unusual packages looking for aggressive representative. All territories open. Straight commission. Box 347, 1501 Broadway, New York.

CHALLENGING SALES POSITION OPEN with rapidly expanding folding carton company. We will match your ambition with the best available incentive program—no limit to earnings or advancement opportunity. We are presently setting up an aggressive sales force and we need YOU if you possess a solid understanding of the industry, are ambitious and would like to grow with us. Must be top-flight salesman with good background in folding carton field. All replies will be treated with strictest confidence. Reply to: Malnove Specialty Box Company, 4227 North 21st Street, Omaha, Nebraska.

FOIL SALESMAN-CONVERTER. Fast growing division requires territorial manager, experienced in foil papers and boards, laminated specialties, films, etc. Man chosen will be assigned Ohio and Pennsylvania and would locate preferably in the Pittsburgh or Cleveland area. Salary and expenses; car furnished; many company benefits. A top opportunity in a compact territory with real potential. Reply with resume and salary requirements to Box 925, Modern Packaging.

LAMINATIONS SALES MGR.—Major multi-plant film converter expanding into combination materials, needs experienced man to develop sales. Must have strong background in film combinations, successful selling record, ability to organize and direct others. Eastern location, probably New York-Baltimore area. Salary appropriate to experience, plus incentive. Indicate salary expected. Sales Manager, Box 923, Modern Packaging.

PACKAGING ENGINEER—FOLDING CARTONS. Leading manufacturer of boxboard and folding cartons is seeking an experienced Folding Carton Packaging Engineer, Metropolitan New York location. Thorough experience in carton construction design thorough knowledge of automatic packaging equipment basic requirement. An exceptionally fine opportunity for qualified man. Salary commensurate with ability and experience. All replies kept strictly confidential. Write Box 924, Modern Packaging, giving full details and salary requirements.

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SALESMAN—COMMISSION BASIS to sell Weinman Transparent Plastic Boxes & Displays. Old established line. Mention territory and other lines now selling in reply. Weinman Brothers, Inc. Est. 1919 3260 W. Grand Ave., Chicago 51, Ill.

PACKAGING PERSONNEL

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FIVE COLOR OFFSET PRESSMEN.—We have just completed a modern new plant and are in the midst of installing several pieces of additional equipment. As a result, we have immediate openings for several five-color Harris offset pressmen and assistants. We pay top wages and provide unusual benefits, but above all we offer an outstanding opportunity for advancement in a rapidly expanding progressive firm. This is a top-quality shop, and we seek only those who are capable of turning out highest quality work. If you can qualify, write full resume of experience and qualifications to: T. C. Mullins, Personnel Manager, Miller and Miller, Incorporated, P.O. Box 865, Atlanta, Georgia. All replies confidential.

ICE CREAM CARTON SALESMAN.—Opportunity is knocking. Miller and Miller Inc., a long recognized leader in the packaging field, has just completed a modern new plant and is expanding production in the Folding Carton Division. As a result, we have an immediate opening for a top-flight ice cream carton salesman who is capable of heading up that department. Must have following in the field and be thoroughly familiar with all types of automatic ice cream packaging machinery. Top pay with outstanding opportunity for advancement awaits man who can qualify. Send complete resume of experience and qualifications to T. C. Mullins, Personnel Manager, Miller and Miller Inc., P.O. Box 865, Atlanta 1, Georgia. All replies confidential.

SALESMEN.—Fast-growing, aggressive mid-western converter of flexible packaging materials, including cellophane, polyethylene, foil, glassine, considering representation in the Missouri, Kansas, Southern Illinois, and Iowa territory. Please send resume of experience to Box 932, Modern Packaging.

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PARTNERS WANT TO PURCHASE going business or contract packaging plant fully equipped with mixers and carton packaging machines. Must be on railroad siding. Submit full details which will be kept in strict confidence. Box 927, Modern Packaging.

EUROPEAN MANUFACTURER of quality self-adhesive tapes e.g. cellulose and vinyl wants to contact companies all over the world interested in selling tapes. Special wishes re lengths, widths and put-up are attended to. Manufacturing licenses are also available in some countries. Reply Box 929, Modern Packaging.

FACIAL TISSUES.—If you are a packaging specialist, facial tissues manufacturer or a tissue distributor, I have some ideas on packaging that would result in out selling any tissue on the market. I would like the opportunity to present these ideas to any one interested. Box 928, Modern Packaging.

ALL CLASSIFIED ADVERTISEMENTS PAYABLE IN ADVANCE OF PUBLICATION

Closing date: 10th of preceding month, e.g., September 10th for October issue.
Per inch (or fraction) \$20.00. Each inch of fraction (boxed) \$10.00 extra.
For purposes of establishing rate, figure approximately 50-55 words per inch.
Address all communications to Classified Advertising Department,
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Modern Packaging reserves the right to accept, reject or censor classified copy.

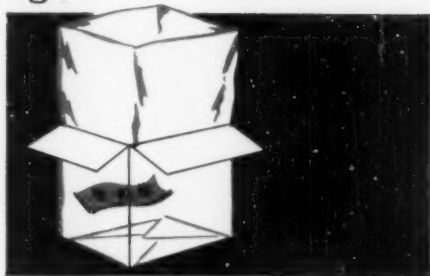


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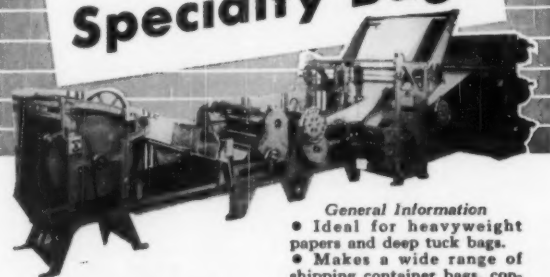
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ROTARY
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- A convenient, practical terminal work table upon which the product from the conveyor collects to wait for manual case packing and accumulation. Extremely efficient.

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MODERN PACKAGING

A BRESKIN
Publication

Published by Modern Packaging Corp., 575 Madison Avenue, New York 22, N.Y.



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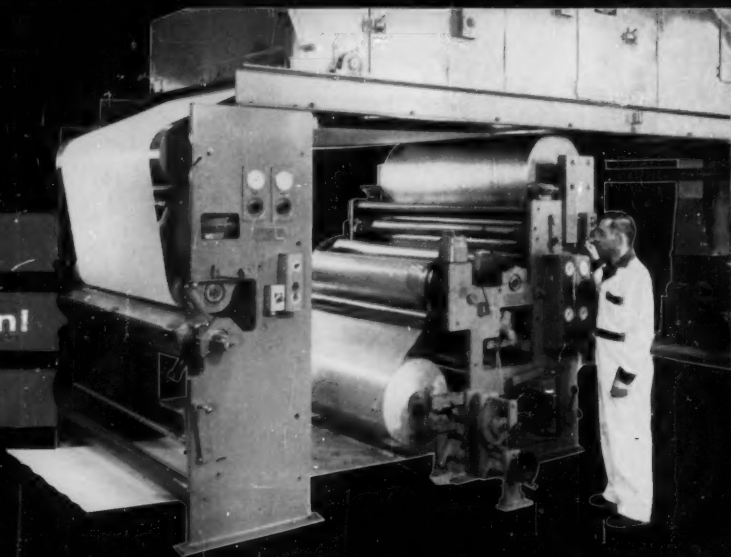
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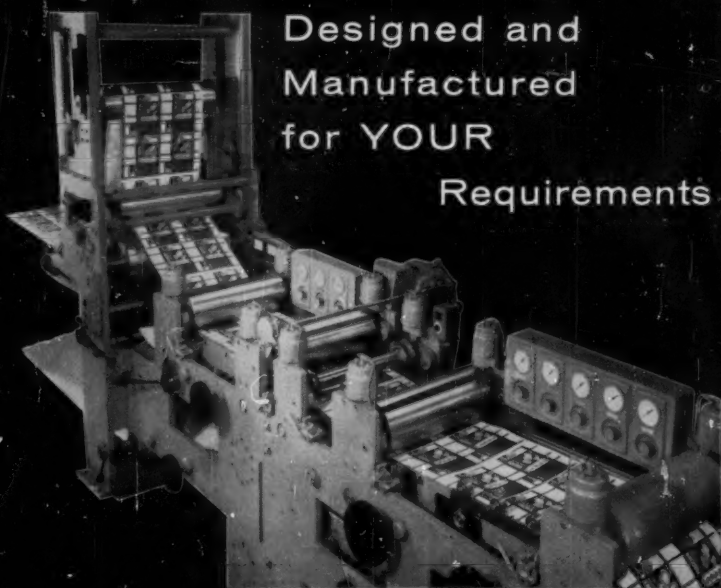
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A black and white photograph of various vintage and novelty items arranged on a dark surface with white diagonal lines. The items include a tin of 'GIN PILLS FOR THE KIDNEYS', a 'Canadian Banker STAMP PAD', a 'SIGNODE' keychain, a 'LOVE-PAT' keychain, a 'SCOTCH Cellulose Tape' dispenser, a 'FINE WHISKIES Sengrom's' bottle, a 'LITEEL' box, a 'REVLON' keychain, and several other small objects like a ball, a cup, and a shell-like object.

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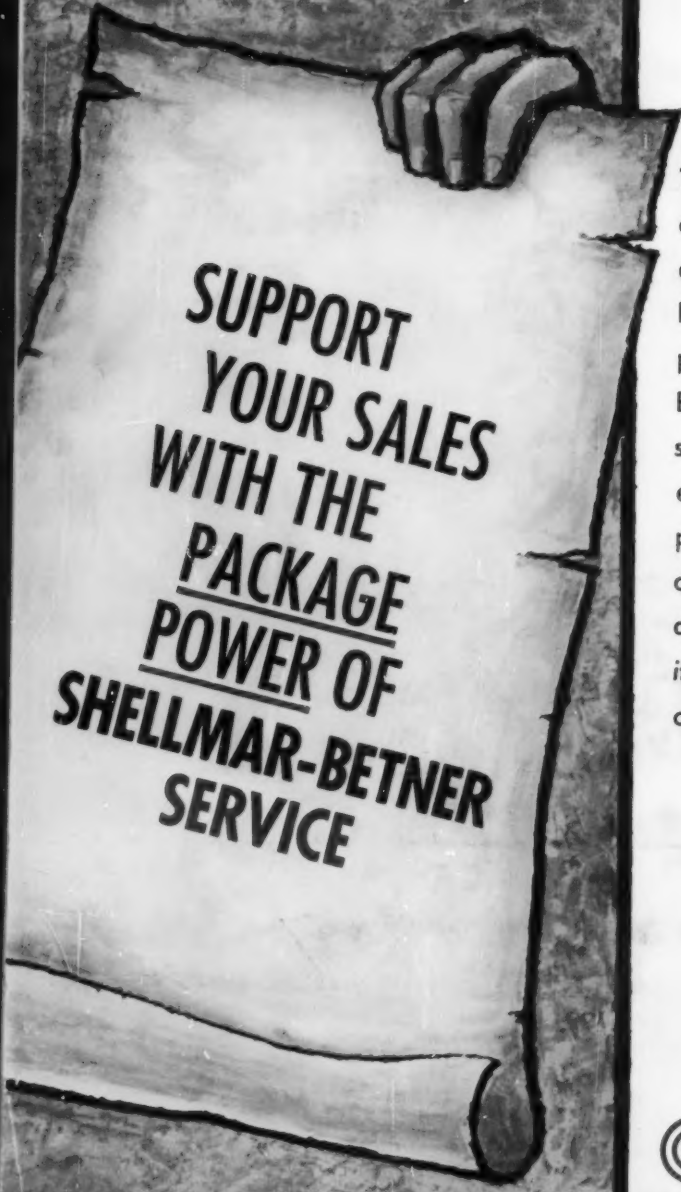


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